

JANUARY 15, 1913  
VOL. IV. :: NO. 5

NEW YORK - CHICAGO  
SHOW NUMBER

SINGLE COPIES, 25c.  
ONE YEAR, \$1.00

# THE COMMERCIAL CAR JOURNAL

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.



## PEERLESS TRUCKS

Put More Days in the Month

**L**AST March this four-ton Peerless Truck worked every day on the calendar, and took enough time out of the nights to equal ten and a half days more—41½ day's full working time in one month, with capacity loads and uniformly satisfactory service.

Today, after running 18,000 miles, the original chain sprockets that were on the truck when it left the factory are in perfect condition. The right kind of steel for a specific part with the right kind of heat-treatment for a specific service—both determined by men who know—put Peerless Trucks beyond speculation as to their fitness for continuous, lasting service in heavy duty work.

TRUCK DEPARTMENT

THE PEERLESS MOTOR CAR CO., CLEVELAND

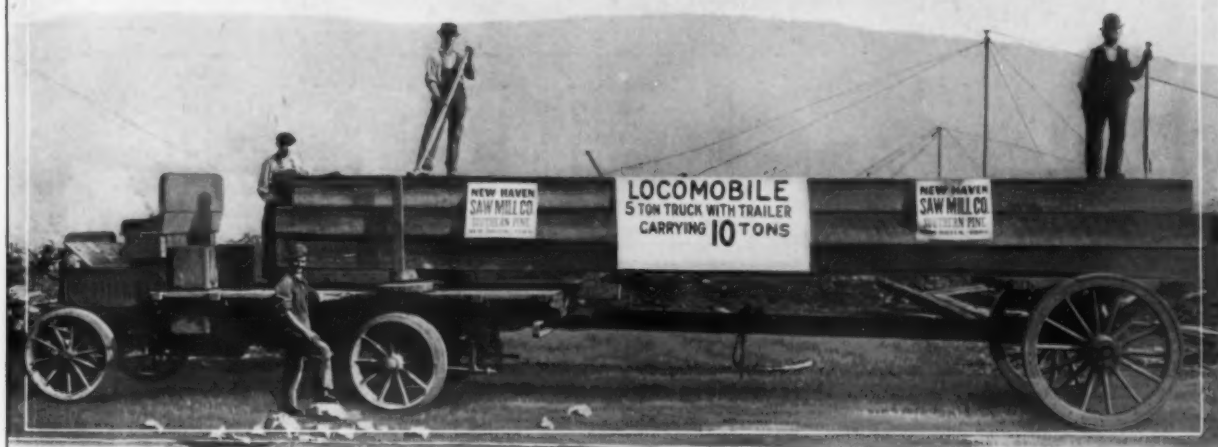
*Makers also of Peerless Passenger Cars*

PUBLISHED THE  
15TH OF EACH MONTH

CHILTON COMPANY

MARKET & 49TH STS.  
PHILADELPHIA

# The *Locomobile* 5 Ton Truck



## The Differential Lock

The Differential Lock used in the Locomobile Five-Ton Truck is one of the many elements that constitute its superiority. Every five-ton truck *must* encounter mud, snow, and ice and should be equipped with this device in order to meet adverse road conditions successfully.

For example, a loaded five-ton truck may stop with one of the driving wheels on slippery ground. In such a case, the Locomobile Truck driver dismounts. By the simple operation of a hand lever, he binds the parts of the differential together, thus preventing its action. Then when the power is applied, the truck is driven from the driving wheel that has traction, and there is no delay or difficulty. The differential lock is a feature which every prospective purchaser of a five-ton truck should *demand*.

This announcement is the 7th one of a series descriptive of Locomobile Design and Construction. Let us send you the seven copies in the series printed thus far. Other printed matter on request. Specific information furnished promptly.

Other important features of the Locomobile Five-Ton Truck are:

Every part designed for heavy truck duty.  
Highest standards of workmanship.  
Best materials used.  
Motor—45 H. P. at 900 R. P. M.  
Five bearing crank shaft.  
Four speed transmission.  
Large transmission gears.  
Governor Control.  
Liberal Tire Equipment.

*These features  
combined only in  
the Locomobile  
Five-Ton Truck*

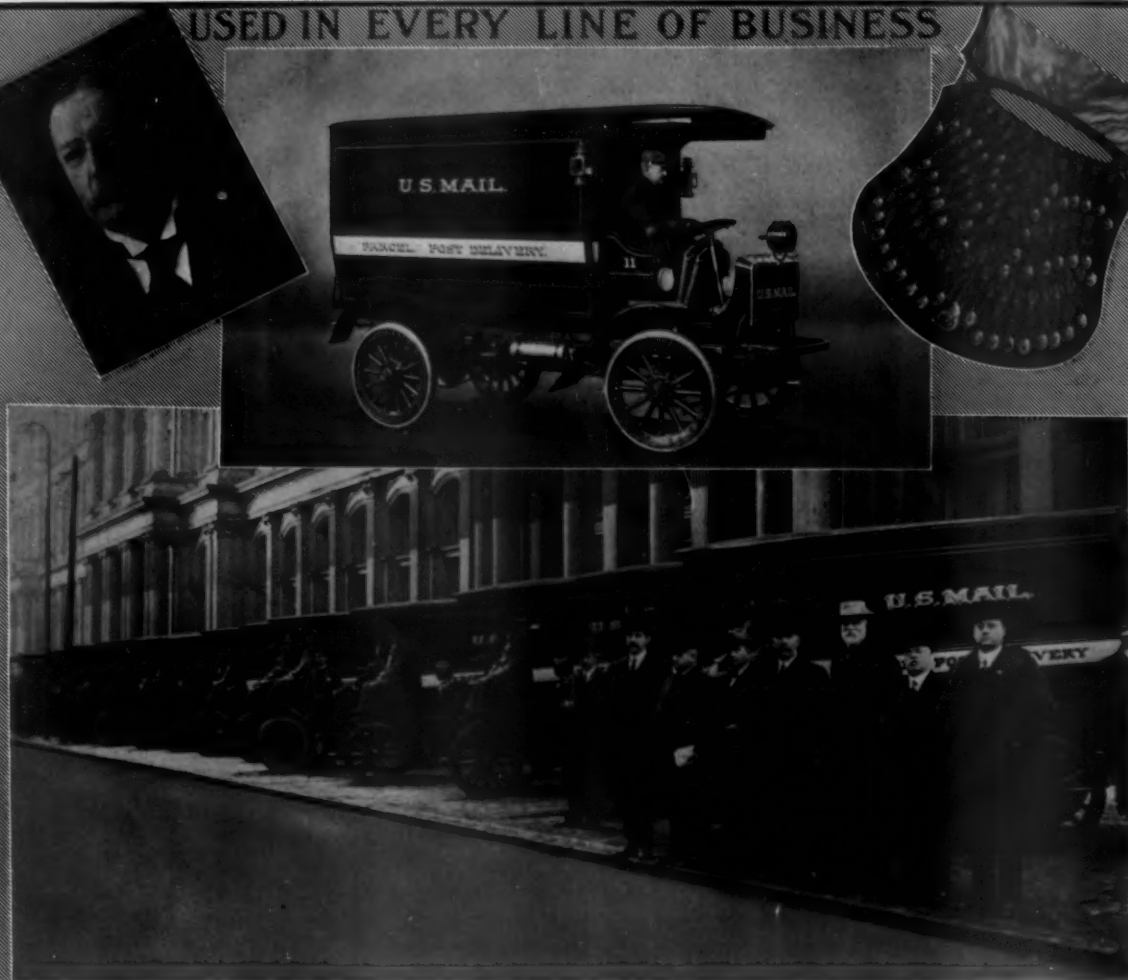
Interchangeable Demountable Tires.  
Large Front Wheels.  
Chain Cases.  
Driving chains each stand 44,000 lbs. pull.  
Differential lock.  
Steel Wheels.  
Dry Disc Clutch.  
Sprags.  
All parts easily accessible.

Ignition and oiling system not subject to driver's control.

THE LOCOMOBILE COMPANY OF AMERICA, 4 Main St., Bridgeport, Connecticut  
Branches in 14 Principal Cities—Locomobile Service for Locomobile Users



USED IN EVERY LINE OF BUSINESS



FIFTEEN AUTOCARS IN THE PARCEL POST SERVICE OF THE PHILADELPHIA POST OFFICE. THE UPPER PICTURE IN CENTER ILLUSTRATES THE AUTOCAR THAT CARRIED THE FIRST PARCEL POST PACKAGE, SENT BY JOHN WANAMAKER, FROM PHILADELPHIA POST OFFICE TO PRESIDENT WILLIAM H. TAFT, IN WASHINGTON, D. C.

### Three Years of Satisfactory Service Is Why Autocars Were Selected for the Parcel Post

The first parcel sent by Parcel Post from Philadelphia, addressed to President Taft, was started on its way at one minute past twelve o'clock on New Year's Day, in an AUTOCAR. Ten new Parcel Post AUTOCARS were put in commission on New Year's Day, in addition to the five which have seen several years of Mail Service in Philadelphia. Four AUTOCARS displaced nine teams of horses, and covered twice as much territory as the teams were able to do. Each car, according to Post Office records, averaged 65 miles per day, and made from 120 to 150 stops for package collection. So valuable did the AUTOCAR prove, that when the parcel post system became a certainty, it was decided to use AUTOCARS, as being best suited for Parcel Post and Post Office Delivery Service.

## The Autocar

### The Autocar Company

FACTORY—ARDMORE, PA.

ESTABLISHED 1897

SALES AND SERVICE STATIONS

PHILADELPHIA	NEW YORK	NEWARK	BOSTON	PROVIDENCE
Atlanta	Baltimore	Buffalo	Chicago	Harrisburg
San Francisco	San Juan	Scranton	St. Louis	Toronto
				Washington
				Wilmington
				Reading

### MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"

## USED IN EVERY LINE OF BUSINESS



### Own a Modern Transportation System

Depending on outside carriers spells "business handicap." The carrier of your merchandise, its kind and character is most important. A few years ago delivery and transportation expenses were recognized as necessary losses, but from the advent of the motor truck, business men are awakening to the fact that big economies are possible, in fact valuable increases follow immediately the adoption of a good type of commercial vehicle. Business men who possess a modern transportation outfit have overcome the enormous hardships of depending upon outside carriers, with their constant uncertainties and attending waits and delays. The business advancement and transportation independence of every AUTOCAR owner is sufficient evidence of the satisfactory results obtained by the merchant securing the right car at the outset. Greater business possibilities and a wider horizon of business expansion have been made possible to concerns owning AUTOCARS. Other concerns soon realize this fact, and today the AUTOCAR is "Used in Every Line of Business."

All material entering into AUTOCAR construction is the best obtainable, and each part is made by the Autocar Company at its factory in Ardmore, Pa. The AUTOCAR is very economical of fuel and oil, which is a most essential feature in a commercial truck. Its strong and sturdy construction makes it the car of enduring qualities and lasting value. Make 1913 the best year of your business career. Start with an AUTOCAR, and reap the results of business advancement which it will surely bring.

### The Autocar Company

FACTORY — ARDMORE, PA.

ESTABLISHED 1897

PHILADELPHIA  
23rd & Market Streets

NEW YORK  
428-30-32-37 W. 19th Street

NEWARK  
418-20 Washington Street

PROVIDENCE  
Pearl & Rice Streets

BOSTON  
642 Beacon Street

## MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"

## USED IN EVERY LINE OF BUSINESS



OF THE 42 AUTOCARS OWNED AND OPERATED BY THE PENNSYLVANIA TAXIMETER CAB CO.  
THIS VIEW WAS TAKEN IN FRONT OF THE BELLEVUE-STRATFORD HOTEL, PHILADELPHIA

### Don't Experiment—Begin Your Motor Delivery Service with THE RIGHT CAR—THE AUTOCAR

We ask every merchant interested in the business expansion of his concern to read carefully this advertisement.

The following letter was written by the President of the Pennsylvania Taximeter Cab Co., and is a strong testimony verifying the value of this type of Autocar in taxicab service. The letter was written to a concern interested in the purchase of a suitable commercial car.

November 26, 1912.

Gentlemen:—I beg to acknowledge receipt of your communication of the 21st inst., desiring an expression of our opinion of the merits of the Autocar. Would say in reply this Company has a large number of these vehicles in service. Our first order was placed with the Autocar Company in September, 1908. We still have some of the original vehicles in commission, I might say operating just as satisfactorily as the very latest type of cars we have purchased from the Autocar Company. We have placed renewed orders with them for new vehicles each year since. Our experience with several other types of cars that we had could not compare with the service we got from the Autocars. One type of car which we had went out of commission completely in less than a year's service. From thorough investigation and actual experience I do not believe there is any other make of car that can show the record that we have had with Autocars. Insofar as this Company is concerned, our experience is such as stated above, and we have no desire to use any other make of car in this business. From material and construction and length of service, I believe you will agree with me, a car operating in its fifth year in this branch of the automobile industry, which I regard as the most severe test, testifies very strongly of the efficiency of the Autocar. I unhesitatingly recommend it to any firm who desires it for commercial use.

Yours very truly,

(Signed) JOSEPH T. KINSLEY, President Pennsylvania Taximeter Cab Co., Philadelphia

H. B. DOUGHERTY & COMPANY  
of Philadelphia, Bedding Manufacturers,

purchased an Autocar only after deliberate consideration, and careful examination, eliminating numerous makes, and finally selecting the Autocar. Below is an interesting item of cost of operating this 3,000 pound load capacity Autocar compared with three double teams of horses. The figures are based on cost records, dating from May 11, 1912 to November 23, 1912, inclusive.

#### Autocar Saving

PER DAY OVER THREE DOUBLE  
TEAMS OF HORSES

**\$8.30**



19 OF THE 87 AUTOCARS NOW OWNED BY ADAMS EXPRESS COMPANY

First eleven Autocars bought in winter of 1909, thoroughly tried out for two and a half years, 64 more Autocars bought in 1912 and twelve more in 1913, or seven repeat orders in the past six months.

More than 800 other business concerns have adopted the Autocar, owning from 1 to 100 Autocars each.

**The Autocar Company—Factory: Ardmore, Pa.**

ESTABLISHED 1897

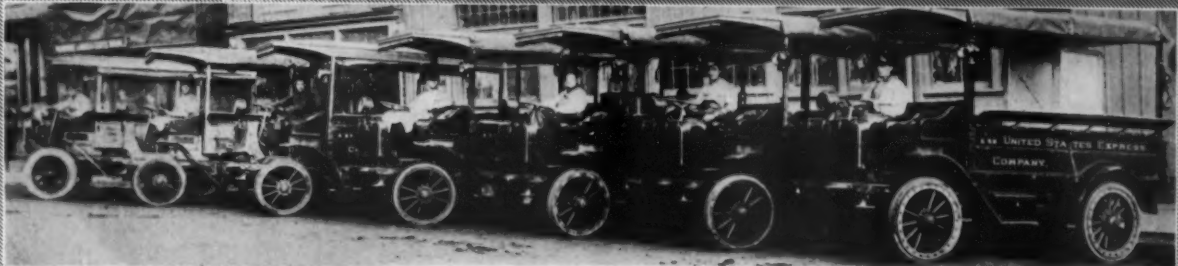
Write for Catalog No. 5C

## MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"



## USED IN EVERY LINE OF BUSINESS

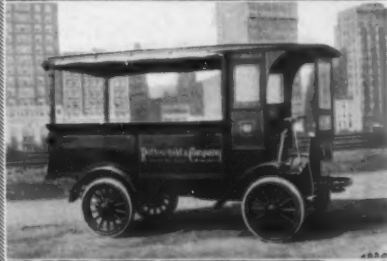
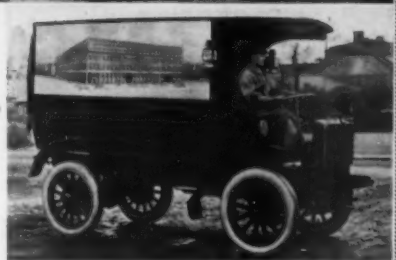


**"Because We Believe  
Them To Be The  
Best Truck Made"**

This is the answer of one of our customers when asked why they selected AUTOCARS. The service which the AUTOCAR is giving to its many hundreds of users is evidence of satisfactory use, and increased business.

Large corporations and smaller concerns in every line of business have increased their business, besides realizing, in addition, greater economies by the use of AUTOCARS in the transportation of their merchandise over any other system previously used. Write for our list of users.

*The*  
**Autocar Company**  
FACTORY—ARDMORE, PA.



## MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"

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# The Commercial Car Journal

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VOLUME IV

PHILADELPHIA, JANUARY 15, 1912

NUMBER 5

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## STEWART AND WARNER COMBINE

The Stewart & Clark Manufacturing Company, Chicago, Ill., and the Warner Instrument Company, of Beloit, Wis., have combined and have formed the Stewart-Warner Speedometer Corporation, with a capital of \$11,000,000, of which \$1,000,000 is 7 per cent. preferred, and \$10,000,000, common. The corporation has purchased the entire capital stock of both of the companies, and all of the speedometer patents owned by the Warner Instrument Company, and A. P. Warner, C. H. Warner and J. K. Stewart. The officers and directors and sales forces of the Stewart and Warner Companies will remain as at present, and the product of each factory will be marketed separately.

The officers of the new company are J. K. Stewart, president, and C. B. Smith, secretary and treasurer.

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## NEW COMPANY TO MAKE TIMKEN-DAVID BROWN AXLES

The Timken-Detroit Axle Company has arranged to manufacture the David Brown type of worms and worm gears in the United States, and has formed a new corporation to be known as the Timken-David Brown Company, the Timken Company and David Brown & Sons, of Huddersfield, England, being the owners of the new company.

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## DAYTON AUTO TRUCK COMPANY FORGING RAPIDLY AHEAD

The Dayton Auto Truck Company, Dayton, O., maker of the Durable Dayton commercial cars, is greatly increasing its output, and has recently made substantial additions to its capital. They will exhibit at both New York and Chicago Shows, and the recent false statement made in an automobile journal that this company was in the hands of a receiver was totally without foundation.

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## GRAMM OUTFIT WILL BE MORE THAN DOUBLED

At the annual meeting of the stockholders of the Gramm Motor Truck Company, the following officers were elected: John N. Willys, president; Geo. W. Bennett, vice-president; J. E. Kepperly, secretary; Walter Stewart, treasurer; J. N. Garver and H. K. Hooke, general managers, and plans were perfected by which there will be 5000 Gramm trucks made during the coming year, most of which will be of the new 1500-lb. truck, which was previously announced.

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WALTER MOTOR TRUCK COMPANY, New York City, has secured the sole manufacturing rights for the United States to the Latil Front Drive System, and a 2½ ton truck embodying this drive will be a prominent feature of the Walter exhibits at the forthcoming shows.

## U. S. MOTOR COMPANY TO BECOME STANDARD MOTOR COMPANY

Articles of incorporation have been filed in Delaware for the Standard Motor Company, Inc., of New York City, which has a capital of \$31,000,000. Its incorporation papers give it authority to manufacture, construct, maintain and operate automobiles, wagon trucks, motorcycles and flying machines, and all other like vehicles and appliances.

It has the power to acquire the business and property and good will of any firm, person or corporation doing the same kind of business in any part of the United States. Incorporators include Donald Muhleman, who is associated with the firm of Joline, Larkin and Rathbone, 54 Wall Street, which has been taking an active part in the reorganization of the United States Motor Company, and is a part of the reorganization plans.

The capital of the Standard Motor Company is divided into \$11,000,000 7 per cent. cumulative, first preferred; \$9,000,000 6 per cent. non-cumulative, second preferred, and \$11,000,000 common stock. For five years the new stocks will be placed in the hands of Charles H. Sabin, Harry Bronner, Jas. C. Brady, as voting trustees. Voting trust certificates will be issued in lieu of stock. It is stated that Walter E. Flanders will be made president and general manager, and W. F. McGuire, vice-president; Carl Tucker, treasurer; M. L. Anthony, comptroller.

At the sale of the U. S. Motor Company before Judge Hough the only bidders were the reorganization committee, who made two proposals, one aggregating \$7,080,000 for all the properties, and the other to pay the creditor on a percentage basis for each of the companies as follows: United States Motor Company, 32½ per cent. of its liabilities; Alden Sampson Manufacturing Company, 24 per cent.; Brush Runabout Company, 23 per cent.; Columbia Motor Car Company, 91 per cent.; Dayton Motor Company, 39 per cent., and Maxwell-Briscoe Motor Company, 60 per cent.

Judge Hough reserved his decision and set January 29th as the date for the consideration for the distribution of the assets of the company.

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## NEW PROCESS COMPANY EXPANDS

New Process Raw Hide Company, Syracuse, N. Y., has been succeeded by the New Process Gear Corporation, which has been incorporated with \$1,000,000 capital. This represents a much increased capitalization, which was made necessary by the tremendous growth in business. Change in name was made because of the fact that the company now manufactures both metal and raw hide gears, the former being the principal product. There is no change in the ownership of the company, the officers being, President, T. W. Meachem; Vice President, T. G. Meachem; Treasurer, A. C. Vosburgh; Secretary, J. F. S. Meachem; additional director and chief engineer, W. H. Diefendorf.

## ADDITIONAL SPACE FOR THE CHICAGO SHOW

Owing to the great number of applications for space at the Chicago Show, which could not be supplied, Manager S. A. Miles has secured the Wilson Building adjoining the Coliseum Annex on the South. This will provide about forty additional spaces for cars and accessories for both the commercial and pleasure car shows. The new building will be entered through passageways for the Coliseum Annex. The addition of this building will also shorten somewhat the distance between the Coliseum and the First Regiment Armory.

## HINDLEY GEAR COMPANY ORGANIZED

The designing and manufacturing of worm gearing of the Hindley type, which has been a branch of the Otis Elevator Company for many years, will be carried on by the Hindley Gear Company, a corporation recently organized under the laws of Pennsylvania. The increase in this line of work has reached such proportions that it was deemed necessary to have a separate company take care of this line of work, especially on account of the demand for the Hindley Worm Gear Axles for commercial trucks.

## PELLETIER AND SMITH HAVE RESIGNED

Paul J. Smith, sales manager of the Flanders Motor Company, and E. LeRoy Pelletier, advertising manager for the same company, which is to become a part of the United States Motor Company, have resigned their positions, as it is stated that Berry Rockwell, formerly advertising manager of the Maxwell-Briscoe Motor Company will succeed Mr. Pelletier, and that A. B. Barkman, who has been sales manager for the United States Motor Company on the Pacific coast, will be transferred to the east, and will have charge of the general sales department.

## TAXICAB STRIKE SITUATION IN LONDON

A settlement of the taxicab strike in London still seems remote, more than 10,000 drivers and garage employees being idle and employers and men continuing to place the blame for the trouble at the doors of the great oil combinations. General opinion is that the price of petrol has gone up ten cents a gallon, not because of the government tax of three cents a gallon but on account of the increased demand for petrol and the enormous profits exacted by the oil combinations.

Recently the Anglo-American Oil Company, the British branch of the Standard Oil Corporation, declared an interim dividend of seventy-five cents a share, which means the distribution of \$750,000 in profits, in addition to the earnings held for reserve. The Shell Transport Trading Company, a British oil combination, paid a ten per cent. dividend, involving the distribution of \$1,750,000.

The English press is advocating arbitration. It agrees that the demands of the men and the attitude of the employers are reasonable. At least three auto cab companies are in the hands of receivers and a half dozen have not paid dividends for years. The government probably will appoint a commission to hear testimony and investigate the reason for the advance in the price of oil. About two thousand taxicabs are at work.

## PERSONAL ITEMS

FRED E. CASTLE has resigned the presidency of the Castle Lamp Company.

C. L. MARBLE has resigned his position of purchasing agent of the Abbott Motor Company.

H. M. BACON has succeeded C. B. Myers as manager of the Goodrich-Diamond Tire branch in Cleveland, O.

M. R. NEWTON, formerly with the Maxwell-Briscoe Motor Company, is now assistant advertising manager for the White Company.

FRED ALDIS has been appointed superintendent of the Briscoe Manufacturing Company, Detroit, Mich., succeeding F. C. Farlinger.

EDW. ROBINSON has been appointed sales manager of the Briscoe Manufacturing Company, Detroit, Mich., succeeding F. C. Arthur.

JAMES JOYCE, JR., who resigned as sales manager of the Selden Motor Vehicle Company, of Rochester, N. Y., will locate permanently in Detroit.

H. M. DOERING, formerly with the Ohio Electric Car Company, has become sales manager of the Gramm Motor Truck Company, Lima, O., and will make his headquarters at the factory.

ALBERT S. HOLLY, who formerly had charge of the truck department of the Packard Company in Boston, has been appointed manager of the New York City branch of the Kelly-Springfield Truck Company.

MICHAEL COKELY has resigned as superintendent of the Gramm Motor Truck Company, Lima, O., and has been succeeded by Thos. M. Conroy, who was formerly with the Morrow Company, at Elmira, N. Y.

CORNELIUS T. MYERS has resigned as chief engineer of the General Motors Truck Company, and has again taken up the consulting engineering work as formerly, giving particular attention to the motor truck field.

H. H. DOERING, formerly general sales manager of the Ohio Electric Car Company, Toledo, Ohio, has been appointed sales manager for the Gramm Motor Truck Company, and his headquarters will be at the Gramm plant at Lima, Ohio.

W. H. ENGLER, who has for several years been the head of the engineering department of the heavy duty gasoline truck plant of the General Motors Truck Company, has been appointed chief engineer with entire charge of the experiment and development work.

W. M. ROBERTS, formerly sales manager for the Packers Motor Truck Company, of Wheeling, W. Va., and also manager of their New York branch, has resigned his position with this company, and has accepted a position with the Mais Motor Truck Company, of Indianapolis, Ind., as general sales manager, with headquarters at Indianapolis, Ind.

H. W. JOHNS-MANVILLE COMPANY, New York City, has added to its line of automobile accessories, a radiator shield for the prevention of the freezing of the water in the radiator when the car is left standing on the street. The shield consists of a thick layer of hair quilted between two layers of water-proof imitation leather.

The Montreal, Canada, automobile show is scheduled to be held January 25th to February 1st. Fifty-two different makes of commercial cars will be exhibited at this show.



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## Factory News, New Trucks and Changes

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ROCKFORD MOTOR TRUCK COMPANY, Rockford, Ill., has been incorporated with \$10,000 capital to manufacture and sell electric and gasoline motors.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, Pittsburgh, Pa., is said to be bringing out an electric engine starter, patented by George Westinghouse.

MOTOR WAGON COMPANY, Detroit, Mich., is putting out a new 1000-lb. delivery wagon, which is equipped with a four-cylinder, four-cycle engine. It has a three-speed transmission, double side chain drive and solid tires.

FOUR TRACTION AUTO COMPANY, Mankato, Minn., has sold its stock, etc., to the Nevada Manufacturing Company, who will establish a factory for the manufacture of trucks at Nevada, Ia. The company has a capital stock of \$200,000.

LEE & PORTER MANUFACTURING COMPANY, Buchanan, Mich., which had contemplated moving its plant to obtain better facilities, has decided to remain in its home city and build an addition to its plant, so as to greatly increase its output of motor car axles.

GARFORD COMPANY, of Elyria, Ohio, is building two additions to its plant, one being 60 x 100 ft., of reinforced concrete, and another being 56 x 280 ft., of the same construction. This is in line with the plans of Mr. Willys to greatly increase the output of the Garford factory.

THE FORD MOTOR COMPANY, Detroit, Mich., will discontinue the light delivery car which they have been making, as soon as the few delivery bodies they have on hand are sold, but it is understood that they are at work on a new light delivery car which will be ready in March next.

HEWITT-LUDLOW COMPANY, San Francisco, has been formed to manufacture Hewitt-Ludlow motor trucks. The company has extensive shop facilities in the Potrero district. It is also the purpose of the company to establish a service station in the downtown district for the accommodation of its patrons.

TOLEDO MOTOR TRUCK COMPANY has just moved into its new plant on Spencer Street. The concern has bought the land and buildings formerly occupied by the McCreery Engineering Company, and has joined the Bunting Brass and Bronze Company, the Rathburn-Jones Company and others in forming the South End colony of factories.

AMERICAN MOTOR TRAFFIC COMPANY, of Washington, D. C., has been organized to manufacture a heavy motor truck of the four wheel drive type. The officers of the company are E. S. Alvord, S. J. McFarren, 1st Vice-President and Manager; W. J. Moore, Second Vice-President; A. L. Kley, Secretary. Additional Directors, J. C. Moncaster and J. C. Menoher.

BROWN COMMERCIAL CAR COMPANY, of Peru, Ind., which was recently organized for the manufacture of 1500 lb. commercial trucks, has purchased the plant of the Otis Elevator Company. This modern plant includes, among other numerous buildings, a large gray iron foundry, 88 x 300 ft., equipped with power cranes and all modern factory appliances. To facilitate the rapidly growing business, a new company has been formed, known as the Peru Castings Machine Company, to operate this plant, and make and machine rough castings.

NEVADA MANUFACTURING COMPANY, Nevada, Ia., has purchased the patents, business and machinery of the Four Traction Auto Company, of Mankato, Minn., and will build commercial cars embodying the four-wheel drive idea, on an extensive scale. The capital of the company has been increased to \$200,000, and further additions will be made to it to provide for the building of the trucks.

BUFFALO ELECTRIC VEHICLE COMPANY, Buffalo, N. Y., has acquired the plant and business of the Buffalo Motor Vehicle Service Company, which has a complete garage and service station at 178 W. Utica Street, Buffalo, N. Y. This acquisition provides the Buffalo Electric Vehicle Company with facilities for the garaging and care of electric commercial vehicles. The Buffalo company expects to put a complete line of electric commercial trucks on the market this year.

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## FINANCIAL AFFAIRS

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STROMBERG MOTOR DEVICES COMPANY has brought suit for an infringement to restrain the Zenith Carburetor Company from manufacturing carburetors alleged to be infringements of its patents.

REMINGTON STANDARD MOTOR COMPANY, 17 Battery Place, New York City, involuntary petition in bankruptcy filed January 7th, 1913, on petition of C. P. Hollister, George J. Mercer and James Rooney, creditors.

WISHART-DAYTON MOTOR TRUCK COMPANY, New York City, has been thrown into involuntary bankruptcy, and Geo. Wishart, principal owner of the company, has been accused of misappropriating the company's money to the amount of \$9551.80.

GRABOWSKY POWER WAGON COMPANY, Detroit, Mich., L. E. Joslyn, referee in bankruptcy, has received a bid of \$137,300 from the Joy Realty Company for the real estate, machinery and equipment, and another bid of \$55,000 for the property except the real estate, but not being satisfied with these offers is arranging to dispose of the property at auction.

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## BRITISH ENGINEERS ACCEPT S. A. E. INVITATION

The invitation of the Society of Automobile Engineers to the British Institution of Automobile Engineers to visit the United States in the spring has now been extended to members of the Society of Motor Manufacturers and Traders, Ltd., and has been accepted by them, so that it is expected that the party will be a very large one. A joint committee of the two English bodies is at work on the preparation of the program, which will be one full of interest. A number of automobile factories will be visited, together with works producing steel, springs, tires, carriage work and other details of the motor vehicle, whilst three days will be spent on board the biggest passenger steamer on the Great Lakes, on the occasion of the annual summer meeting of the Society of Automobile Engineers. These three days will, therefore, be divided up between the reading of papers and the visiting of places of interest on the Great Lakes.

## CONVENTIONS OF INTEREST TO THE TRADE

The list of conventions given below is to be published each month so that commercial car manufacturers can communicate with the proper authorities with the idea of arranging to give lectures, illustrated talks, statistics, etc., to show the advantage of motor trucks in these various lines, also possibly to show and demonstrate their cars.

- January 20—Fifth Annual Convention, Indiana Cleaners' and Dyers' Association, Indianapolis, Ind., Denison Hotel. Geo. Schaal, secretary, Terre Haute, Ind.
- January 20-22—Annual Convention, West Virginia Federation of Agricultural Associations, Charleston, W. Va., E. W. Sanderson, Morgantown, W. Va., Secretary.
- January 20-24—Annual Meeting, Organized Agriculture, Lincoln, Neb.
- January 21-23—Connecticut Dairymen's Association will meet in Meriden, at the Auditorium, with hotel headquarters at the Winthrop. J. G. Schwink, Jr., is Secretary.
- January 21-23—Arkansas Horticultural Society will hold Annual Convention at Fort Smith, Ark.
- January 21-23—Ohio Association of Retail Lumber Dealers will convene in Cleveland, Ohio.
- January 21—Retail Furniture Dealers' Protective Association, New York Furniture Exchange, New York City, G. L. Richardson, President.
- January 21-23—Pennsylvania Dairy Union will convene at Harrisburg, Pa.
- January 21-23—Convention of Indiana Retail Merchants' Association, Vincennes, Ind. Thomas F. Palfrey, Secretary.
- January 21-24—Exhibition and Convention of Mississippi Valley Retail Implement and Vehicle Dealers' Association, St. Louis, Mo., Coliseum.
- January 21-24—Convention of Minnesota Dairymen's Association, Northfield, Minn. F. D. Currier, Secretary.
- January 21 to 24—Wisconsin Retail Hardware Association Convention at Milwaukee, Wis. Geo. W. Kornely, 806 Third Street, is Secretary.
- January 22-23—Convention of Iowa Brick and Tile Association, Des Moines, Ia.
- January 22-24—Southwestern Lumbermen's Association will hold Convention in Kansas City, Mo.
- January 22-24—Convention of South Dakota Grain Dealers' Association, Watertown, S. D. Metropolitan Opera House.
- January 22-29—Convention of Montana Dairymen's Association, Anaconda, Mont.
- January 23-24—Annual Convention of the National Lumber Exporters' Association, at Chattanooga, Tenn.
- January 24—Convention of New York State Wholesale Grocers' Association, Arlington Hotel, Binghamton, N. Y. Nelson Gray, New York City, Secretary.
- January 24-25—Convention of National Piano Manufacturers' Association, Lakewood, N. J. H. W. Hill, Secretary, 251 W. 23rd Street, New York City.
- January 27-28—State Dairymen's Association Convention, Fort Lupton, Col.
- January 27-29—Convention of Retail Merchants' Association, Helena, Mont. Charles Austin, Butte, Mont., Secretary.
- January 29-30—The Pennsylvania Lumbermen's Association is to convene in the Hotel Walton, Philadelphia, Pa.
- February 4-5—Convention of Hardwood Manufacturers' Association of U. S., New York City, Hotel Sinton.
- February 5-8—Industrial Show, Elgin, Ill., Coliseum. H. D. Howell, Secretary.
- February 10-15—Convention of Nebraska Retail Hardware Association Omaha, Neb. Nathan Roberts, Secretary, Lincoln, Neb.
- February 10-16—Convention of Virginia Farmers' Educational and Co-operative Society, Lynchburg, W. Va.
- February 11-13—Michigan Retail Hardware Association is to convene at Detroit, Mich. Headquarters at Hotel Cadillac.
- February 11-13—Annual Convention of the Texas Hardware & Implement Association, Dallas, Tex.
- February 11-13—Convention of Electrical Supply Dealers' Association, Buffalo, N. Y. F. Overbaugh, Secretary.
- February 11-14—Convention of the Pennsylvania Retail Hardware Association, Pittsburgh. W. P. Lewis, Secretary, Huntington, Pa.
- February 12-13—Convention of State Dairymen's Association, Norfolk, Va. W. D. Saunders, Secretary.
- February 12-14—Second Annual Convention of the Buttermakers' Association at Cedar Rapids, Iowa. J. J. Brunning, of Strawberry Point, is Secretary.
- February 17-22—Citrus Fruit Exposition, San Bernardino, Cal.
- February 18-19—Convention of State Dairymen's Association, Valley City, N. D.
- February 18-20—Kentucky Retail Hardware and Stove Dealers' Association Convention, Galt House, Louisville, Ky. J. M. Stone, Sturgis, Ky., is Secretary.
- February 18-20—Colorado Retail Hardware and Improvement Association will convene at Pueblo, Colo., with headquarters at Congress and Vail Hotels. J. F. Jones, of Denver, and F. C. Moys, of Boulder, are President and Secretary, respectively.
- February 18-20—Convention of the North Dakota Retail Furniture Dealers' and Undertakers' Association, at Jamestown, N. D. M. H. Borman, of Abercrombie is President, and A. S. Millough, of Wimbledon, is Secretary.
- February 18-21—Minnesota Retail Hardware Association will convene at St. Paul, Minn., exhibition to be held at St. Paul Auditorium. Thos. G. McCracken, Metropolitan Life Bldg., Minneapolis, is Secretary.
- February 18-21—New York State Hardware Association will hold eleventh annual convention in the new Broadway Convention Hall, Buffalo, N. Y. La Fayette Hotel will be convention headquarters. John B. Foley, of Syracuse, N. Y., is Secretary.
- February 20-28—Ohio State Retail Hardware Merchants' Association Convention, Sunday's Tabernacle, Columbus, O. J. Y. Bassell, Secretary, Chamber of Commerce, is in charge of arrangements.

- February 25-27—Convention of Connecticut Hardware Dealers' Association, Hartford, Conn. A. R. Jones, President.
- February 25-27—New England Hardware Dealers' Association will hold convention and exhibition at Springfield, Mass.
- February 25-28—Fifteenth Annual Convention of the Iowa Retail Hardware Association, to be held in the Des Moines Coliseum, Des Moines, Iowa.
- March 4-6—South Dakota Retail Hardware Dealers' Association will convene at Huron, South Dakota. E. C. Warren, of Pierre, is Secretary.
- March 18-20—Florida Retail Hardware Association will convene at St. Augustine, Fla. W. K. Jackson, of Lakeland, is Secretary.
- April 10-12—Joint Triple Convention of National Supply & Machinery Dealers' Association, American Supply and Machinery Manufacturers' Association and Southern Supply & Machinery Dealers' Association; Indianapolis, Ind., Claypool Hotel.
- May 27-29—National District Heating Association will hold 1913 Convention at Indianapolis, Ind. R. D. DeWolf, of Rochester, N. Y., is President, and D. L. Gaskill, of Greenville, O., is Secretary and Treasurer of the Executive Committee.
- June 9-15—Convention of National Association of Sheet Metal Contractors, Masonic Temple, Washington, D. C. J. A. Pierpont, Secretary.
- June 10-12—The American Steel and Hardware Association will convene at Buffalo, N. Y. Harry Saunders, of the Chamber of Commerce, is Secretary of the committee in charge of preparations.
- June 15—Convention of Mine Inspectors' Institute of America, Birmingham, Ala.
- July 7-14—Carolinas Retail Hardware Dealers' Association Convention, Richmond, Va. T. W. Dixon, Secretary, Charlotte, N. C.
- July 21-26—North Dakota State Fair, Grand Forks, N. D.
- August—Cotton Carnival, Galveston, Tex. Galveston Commercial Association, F. M. Lege, Jr., Chairman.
- September 3-13—South Dakota State Fair.
- September 3-13—Retail Grocers' Association Show, San Jose, Cal. A. F. Emlay, Secretary.
- October 20-26—Georgia State Fair. M. V. Calvin, Secretary, Macon, Ga.
- November—Million Dollar Fair. New Orleans, La.

## D. W. F. BALL BEARING COMPANY DOES NOT OWN CONTROLLING INTEREST IN HESS-BRIGHT MANUFACTURING COMPANY

The notices which have appeared in regard to the purchase by the D. W. F. Ball Bearing Company, of Germany, of the interest of Henry Hess in the Hess-Bright Company, of Philadelphia, Pa., have to a certain extent been misleading, in that the impression was given that the D. W. F. Company had purchased a controlling interest. This is not true according to a statement recently sent this publication by the Hess-Bright Manufacturing Company. The new president, F. E. Bright, who was formerly vice-president of the Hess-Bright Company, has for some time held the controlling interest, and under the new arrangement still holds the complete ownership control of the company.

Mr. Bright was a manufacturer of ball bearings as early as 1890, and is a well-known man in the machinery field, both in this and foreign countries. He was associated inventor and designer of a linotype which he took to Europe in 1893, where he personally established its manufacture with the famous machinery firm of Ludwig Loewe & Company, Berlin, which is the parent company of the D. W. F. The intimate association between the Loewe Company and Mr. Bright, which began at that time, has continued during the organization of the D. W. F., and the founding and development by Mr. Bright and Mr. Hess of the Hess-Bright Manufacturing Company, which, as is well known, controls many other patents and those of the D. W. F. Company in this country, Mr. Bright, who has now assumed the duties as active head of the Hess-Bright Manufacturing Company, and as owner of a controlling interest of the company, will direct its policies to the end of securing still further benefit from the unequalled facilities and resources of the Loewe, D. W. F. industrial family.

MOTZ TIRE & RUBBER COMPANY has opened a branch sales and service department at 4376 Olive Street, St. Louis, Mo., with E. G. Seibel, formerly connected with the Goodrich Company, in charge.

## THE PUBLISHERS' PERSONAL PAGE

### The Automobile Made Gasoline,—If Forced, It Can Make a Substitute

#### Fuel Situation Demands Action

Unless some action is immediately taken by the automobile manufacturers and carburetor makers, the industry will certainly receive a setback, owing to the fuel situation.

The lack of appreciation of this fact is very apparent on the part of the manufacturers. The question is, what can be done to immediately provide for the use of kerosene or some other fuel, in the present engines.

#### 100 Per Cent Increase

An increase in price of practically 100% in six months is the recent record of gasoline. Already the unusual price is affecting the use of commercial cars. This rise is sufficient to make the cost of operating an ordinary two-ton truck for a year, almost \$300 greater for fuel alone, and the comparative increase when larger units are taken into consideration, is even greater. This is a condition that cannot be overlooked, or a remedy applied too soon. It doesn't matter whether this increase in price is due to an actual scarcity of crude oil, or to manipulation. The results are the same, as far as the users of motor-driven commercial cars are concerned.

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#### There Must be a Reason

One theory has been advanced that the manufacturers of gasoline are storing crude oil and do not wish to increase the production, owing to the fact that from every gallon of crude oil only 22% of commercial gasoline is obtained, while 45% of commercial kerosene must be made, and 15% of cylinder and lubricating oil. A large increase in gasoline production will cause an overproduction of the other necessary products,

which will necessitate storing same or reducing the price.

#### Kerosene Carburetors the Solution

We advocate strongly the use of kerosene as an alternative fuel with gasoline, and earnestly urge both car and carburetor manufacturers to co-operate to place on the market as soon as possible, trucks which can be successfully operated on either fuel. The commercial car will be affected even before the pleasure car by this enormous rise in the cost of fuel, as their use is essentially a matter of dollars and cents, while the pleasure car owner does not so carefully count the cost.



The above is a reproduction of our well-known CCJ horse, in calendar form, which was recently sent to the trade. We herewith publish some appropriate lines inspired by the calendar. Mr. H. R. McMahon, of the Liggett Spring and Axle Company, Pittsburgh, Pa., is the perpetrator.

I behold on my wall a most horrible sight,  
A red-headed horse in a terrible plight,  
The three imps on the job are the CCJ,  
I'll report you at once to the S. P. C. A.

—H. R. McMahon

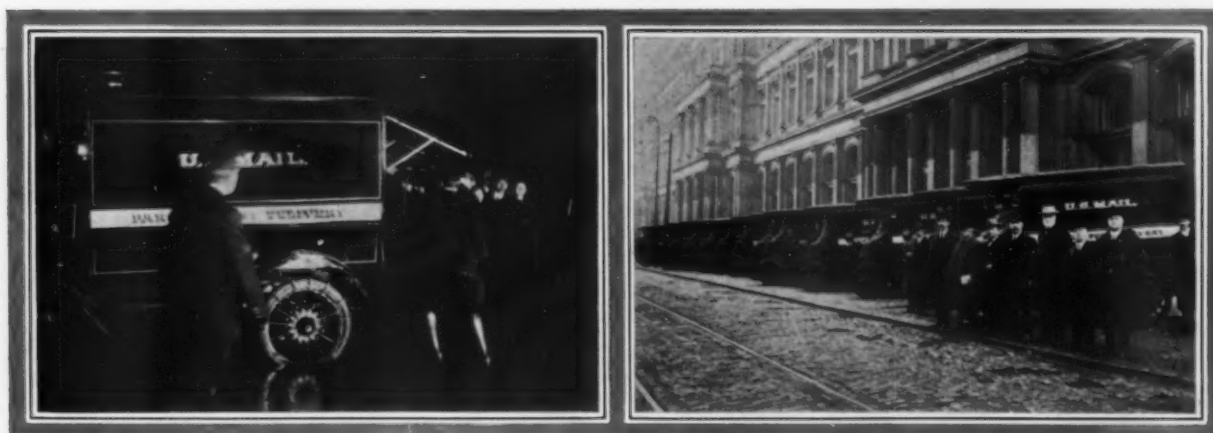


## First Parcel-Post Package in Philadelphia Carried by Autocar

A new use for motor trucks has been signalized in the opening of Uncle Sam's new Parcel Post regime by the installation of Autocar commercial vehicles by Postmaster Smith, of Philadelphia.

The despatch of the first parcel, addressed to President Taft at one minute after twelve o'clock, on New Year's Day in an Autocar truck from the Post Office to the West Philadelphia Station was an important event in the world of com-

Ten new Autocar mail wagons were put into commission on New Year's Day; three of these are of the same type as the second class mail cars already in use, and the other seven are of a new and special type designed for the Parcel Post. For the present the three new second class mail cars will be used in the Parcel Post service, but will be transferred to the second class mail service, when three additional Parcel Post cars are delivered in a few weeks' time.



**Delivering First Parcel Post in Philadelphia**

At the left is shown the start of the first Parcel-Post package, the famous Wanamaker spoons for President Taft. At the right are seen the fifteen Autocar trucks used in Parcel-Post delivery in Philadelphia

mercial motor delivery. It was a portent of what it is believed will soon be a widespread adoption by post offices all over the country of power vehicles for the successful carrying out of Parcel Post demands.

Fifteen Autocar trucks made by the Autocar Company, of Ardmore, Pa., now form the service of the Philadelphia post office, and this number will shortly be increased to eighteen. The adoption of the Autocar is the result of more than three years' use of four of these well-known delivery cars in mail service, as given in our April, 1912, issue.

It is an interesting fact that the first parcel mailed in Philadelphia under the new law on the morning of New Year's Day and carried on the first stage of its journey to the White House in an Autocar was sent by John Wanamaker, who himself is an extensive user of this make of delivery car. Mr. Wanamaker has more than 100 Autocar trucks in the delivery service of his Philadelphia and New York department stores. It was, therefore, no new thing to him on New Year's morning to see the now famous package containing 58 silver souvenir spoons loaded on one of these swiftly moving delivery cars.

### MOTORIZATION OF SAN FRANCISCO'S PUBLIC SERVICE DEPARTMENTS



IN PROVIDING automobile transportation to promote the working efficiency of various municipal departments, San Francisco ranks among the most progressive cities in the world. Practically all of this municipal motorization has been accomplished within the last three or four years, however. By the installation of motor-driven vehicles, San Francisco's fire, police, education, and health departments have been brought to a higher state of efficiency and usefulness than ever before. In the Golden Gate Metropolis it is simply a matter of time before the whole vehicular equipment of the city's departments will be motorized.

Taking the fire department as an example, San Francisco now has in service a special Pope-Hartford double eighty-gallon tank chemical and a special Pope-Hartford hose wagon, designed to move a heavy cargo of water hose and a squad of ten men.

The health department has one Pope-Hartford ambulance in service, already has ordered a second one. No less than three ambulance teams of two horses each have been displaced in San Francisco's emergency hospital service by the introduction of one motor ambulance. The emergency hospital men say that the motor has proved itself more efficient in every way than the horse-drawn vehicles and it seems probable that all of the city's hospitals will be so equipped.

# THE COMMERCIAL CAR JOURNAL

Vol. IV.

PHILADELPHIA, JANUARY 15, 1913

No. 5

Published the 15th of each month by the

## CHILTON COMPANY

Market and 49th Streets

Philadelphia, U. S. A.

JAMES ARTMAN.....President  
GEO. H. BUZBY.....Vice President  
C. A. MUSSELMAN.....Sec'y and Treas.

### ADVERTISING DEPARTMENT

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Eastern Manager.....C. MONROE SMITH, New York

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E. S. FOLJAMBE.....Managing Editor

### ASSOCIATE EDITORS

ALBERT G. METZ.....J. HOWARD FILE

### SUBSCRIPTION RATES

United States and Mexico.....One Year, \$1.00  
Other Countries in Postal Union, including Canada.....One Year, \$2.00

Make checks, money orders, etc., payable to Chilton Company.

Change of Address—Subscribers desiring their address changed, should give the old as well as the new address.

Entered as second-class matter at the Post Office at Philadelphia, Pa.  
under the Act of March 3, 1879.

## ONE THOUSAND DOLLARS FOR FACTS



MUCH has been said pro and con about the circulations of the three leading commercial car journals; but as there still remains doubt in the minds of many advertisers as to their relative values, based on quality and quantity of circulation, the Chilton Company, publishers of the COMMERCIAL CAR JOURNAL, offer one thousand dollars to pay for a thorough audit of the COMMERCIAL CAR JOURNAL (published in Philadelphia), Power Wagon (published in Chicago), and Commercial Vehicle (published in New York).

It is with regret that we feel that such an offer is necessary, but representatives of the Chilton Company have reported that advertisers have told them that there seemed to be a desire on the part of representatives of two other publications to distort facts for their benefit and to the detriment of the COMMERCIAL CAR JOURNAL. The Chilton Company has always advocated detailed circulation statements, audited; and furthermore, is at present endeavoring to have Congress enact a law making it compulsory for publishers, enjoying the benefit of the second-class mailing privilege—to print detailed circulation statements in their publications, to be verified by the Postal authorities.

In the absence of such a law, and in the face of attacks which have been made upon the Chilton Company and the

COMMERCIAL CAR JOURNAL, it feels that it should make this public offer to show its sincerity, and if possible, to obtain for the automobile industry at large, detailed information regarding the quantity and quality of circulation of the three leading papers in the commercial car industry.

If there is any advertiser or Association sufficiently interested to assist in the work of enlightenment and will so inform us, we will have prepared the necessary formal papers.

*First.*—A request will be made for the privilege of sending a responsible firm of auditors to the offices of the three above-named publications.

*Second.*—A committee of five is to be appointed to engage a responsible firm of auditors, the committee to consist of men selected as follows: One by the publishers of the COMMERCIAL CAR JOURNAL, and one by the publishers of either Commercial Vehicle or Power Wagon, which ever may be first to consent to the audit; one by an advertiser in either Commercial Vehicle or Power Wagon, and one by an advertiser in the COMMERCIAL CAR JOURNAL (said advertisers to be representative firms); these four men to select the fifth.

*Third.*—If the \$1000 offered by the Chilton Company is not sufficient to cover all expenses, the said Chilton Company agrees to pay whatever is necessary to make the audit most thorough.

*Fourth.*—The investigation or audit is to cover twelve issues, starting with the January, 1912 number, thus covering all the issues of the year.

It is to cover the number of copies circulated each month and the total for the year.

It is to cover copies going to News Companies and the quantity returned.

It is to cover all paid, sample, advertisers' copies, etc., classify trade and consumer circulation and give ratings of subscribers, if possible.

It is to be as complete as it is possible for the auditors to make it and the publishers must co-operate to the best of their ability.

*Fifth.*—Copies of the auditors' reports are to be given to the advertiser or Association obtaining from the publishers the privilege of making the investigation, and also to the three publishers; and these reports may be given publicity.

We, the undersigned, being the officers and principal stockholders in the Chilton Company (publishers of the COMMERCIAL CAR JOURNAL), do hereby pledge the support of the Chilton Company to assist the commercial car industry, advertisers and Automobile Associations in having made public accurate detailed statements of circulation of the COMMERCIAL CAR JOURNAL, Power Wagon and Commercial Vehicle, based on the reports of responsible auditors, and further agree to pay the cost of the audits.

CHILTON COMPANY, Philadelphia.

JAMES ARTMAN, *President*;  
GEO. H. BUZBY, *Vice-President*;  
C. A. MUSSELMAN, *Sec. and Treas.*

The Chilton Company advocates passage of a law requiring the printing of detailed circulation statements in each issue of all periodicals enjoying the second-class rate of postage.

## The Fuel Question



**N**EVER in the history of the automobile has the fuel question been as serious as at the present time. The high price of gasoline has caused much alarm in automobile circles, but apparently the manufacturers have not given it the serious consideration it deserves. However, at the last meeting of the N. A. A. M. the subject was discussed, and it is said that Congress will be asked to permit a promiscuous manufacture of wood alcohol properly labeled. This however, does not seem to us to be the proper solution of this problem, chiefly for the reason that the economical use of alcohol as outlined in an article by Mr. Foljambe in this issue, requires an entire change of motor construction. This alone will prevent its general introduction until such time as the makers design special engines for its use and even then the 900,000 cars in use at the present time could not use the new fuel to advantage, to say nothing of the five or six hundred thousand cars which will be placed on the market this coming year. Wood alcohol is not as good an engine fuel as denatured. In the present type of automobile engine of only 60 to 75 lbs. compression, almost double the amount of alcohol will be required to give an equal mileage with gasoline. This would indicate that it would not come into general use unless placed on the market at half the price of gasoline.

We must look to some kind of fuel which can be used in the immediate future without radical change in existing designs. Benzol is such a fuel, but is manufactured only in small quantities more or less as a side product of the manufacture of gas from coal. England has already had to face the fuel question, and benzol has to a certain extent displaced the English petrol. At the present time there is an agitation in England's automobile circles, for legislation which will encourage the manufacture of benzol. Offers are also being made in the way of prizes for the development of an all-British fuel, that is a fuel produced entirely within the country, and presumably manufactured from products which are not limited.

Kerosene, however, is already manufactured in large quantities, and any increase in the production of gasoline will cause a very great over-production of kerosene. This oil is perfectly suitable for use in automobile engines of existing design, only new vaporizers and carburetors being required. We therefore believe that the automobile industry should look first to kerosene for relief in the present situation.

It is possible to provide means for gasifying kerosene so that it can be used in the present type of automobile engine

without causing undue carbonization or smoke at the exhaust. As more miles to the gallon can be obtained from kerosene, and the fire risks are very much less, there is no reason why steps should not be immediately taken to use this fuel for commercial cars.

The present cost of kerosene is between six and seven cents per gallon while that of gasoline is sixteen to twenty cents. With commercial cars the fuel cost is an appreciable item, and the recent rise in gasoline has made itself appreciably felt in the total cost of delivery. With a large fleet of cars a difference of eight or ten cents a gallon could easily amount to as many thousand dollars per year, and where the cost of every item no matter how small is held at the lowest possible figure, this is well worth saving.

That kerosene will rise in price if adopted with gasoline as a fuel, is of course to be expected, but the possibility of using both of these fuels will prevent the price of either from being raised to a prohibitive figure, at least until such time as the supply of both is greatly exceeded by the demand. But before that, other fuels and alcohol engines will in all probability have entered the field.

The use of kerosene as a fuel for internal combustion motors is not new. Carburetor makers have been experimenting for several years, and we are assured by several that they have perfected suitable devices to be used with the present types of motors. The demand, however, must be sufficiently great to warrant the introduction of special machinery, tools, dies, etc., and this demand must come from the automobile manufacturers. The demand would immediately exist on the part of the public if the user in general was assured that successful kerosene carbureting devices could be had. It, therefore, is for the manufacturer of trucks to provide kerosene carburetors as a part of their regular equipment. It is understood that with nearly all these devices gasoline is used in starting, and with practically no change gasoline can be used at any time alternately with kerosene. We have by letters suggested to makers the introduction of kerosene as a fuel, and again urge the manufacturers to supply such devices at least as an option, if not yet ready to put them on the market as standard truck equipment. So far as we know not a maker is featuring at the coming shows a kerosene burning truck. Yet the fuel situation is of such grave importance that it should be met by the makers as soon as possible and no doubt marked progress will be seen in this respect at the shows a year from now.



The Fuel Situation



## WHY NOT ANTI-SKID DEVICES?

### Trucks Made a Spectacle of by Lack of Them



**D**URING the recent heavy snowfall in Philadelphia, at Christmas time, it was very noticeable that several large users of commercial cars put their machines on the street without any kind of an anti-skid device, and expected the drivers to maintain the high standard usually set by these cars.

Why any company, as for instance, a large express company, should send out these trucks without any preparation whatever for the condition which they were to meet, is a conundrum hard to solve. The drivers of the trucks of one company in particular, were not even given ropes with which to wind wheels in case they got stuck, and it is needless to say that these machines were frequently seen spinning their rear wheels helplessly and needlessly when endeavoring to start on a slippery or slushy pavement. That the trucks did get out of these positions after a time was only by dint of much labor on the part of the drivers by using lap-ropes and tarpaulins under the wheels, to say nothing of pieces of boxes, planks, ashes, etc.

In every case a spectacle was made of the vehicles thus temporarily hung up when there was absolutely no call for such delay. Spectators wondered at the helplessness of some of these cars, and superficial observers, many of whom were doubtless business men considering the purchase of commer-

cial cars, might naturally be expected to misjudge trucks in general after seeing such an exhibition.

There is truly an educational work for the manufacturers, dealers and trade press, when those in charge of the delivery service of large companies make no provision whatever for such emergencies.

The lack of knowledge of the drivers was also shown in many cases. Many were endeavoring to start their trucks with the front wheels cramped to the limiting angle away from the ditch in which they happened to be. This, of course, made it very much more difficult for the machine to be started than if the wheels had not been cramped, and allowed to roll freely until the car was well started.

Such an oversight on the part of a small user or a company using trucks for the first time might be expected, but there is no excuse for companies literally using trucks by the hundreds, allowing their cars to flounder helplessly in the ditch.

Of course the cars succeed in getting out in practically every instance without help, and probably their total day's running amounted to a great deal more than the work of any horse and wagon, but, at the same time, their efficiency must have been greatly reduced, and therefore the efficiency of the entire system, and this at a time when the highest efficiency was needed, to say nothing of the bad effect which such a spectacle must have had on the minds of prospective purchasers.

## The Steel and Rubber Markets

### Rubber Recedes to 107 After Having Reached 112

During the past three weeks rubber has receded gradually until it is again down to \$1.07. Demand seems to just about equal supply and no great change is expected on January 9th. The quotations were:

Up-River—			Africans—		
Fine	1 07 a	07 1/2	Massal red	97 a	98
Coarse	81 a	82	Red C'go	96 a	97
Island, fine	99 a	1 00	B'k C'go	95 a	96
Coarse	55 a	56	Soudan—		
Cameta	55 a	56	Niggers	88 a	90
Caucho—			Accra, lb.	46 a	47
Ball	82 a	83	Gambia, prime	62 a	64
Centrals—			East India—		
Corinto	79 a	80	Smk. sh'ts	1 11 a	12
Esmeralda	79 a	80	Ceylon, lbs. & sh'ts	1 08 a	09
Guatemala, slab	55 a	56	Pale crepe	1 10 a	11
Mexican—			Borneo I.	61 a	62
Scrap	78 a	79	Borneo II.	50 a	51
Strip and scrap	77 a	78	Borneo III.	42 a	48
Guayule	Nominal		Pontianac—		
Balata, sh't	80 1/2 a	81	Prime plantation	7 a	..
Cludad, b'k	55 1/2 a	56	Palembang	7 a	..
Trinidad, b'k	Nominal				

LONDON, Jan. 8.—Closing: Up-river fine, 4s 6 1/2d; up-river coarse, 3s 4 1/2d; pale crepe, 4s 6d, basis first latex. Prices are for spot and nearby. Market closed quiet but steady.

Tires—		
Automobile	9 1/4 a	10 1/4
Bicycle, pneumatic	5 1/2 a	5 3/4
Wagon and carriage, solid	9 1/4 a	9 3/4

### Copper Production for 1912 Exceeds 1911

The production of refined copper for the year 1912 exceeds that of 1911 by 150,000,000 lbs., which is about 10 per cent., as the total for 1912 was 1,581,920,244 lbs. The deliveries for 1912 increased 101,543,000 lbs. over 1911 or 48,500,000 lbs. less than the increase in production. The stock on hand at the beginning of 1911 was 122,030,000 lbs., at the beginning of 1912, 89,454,695 and at the beginning of 1913, 105,312,582.

### Steel Market Stationary

On account of the many unfilled orders on hand, the steel companies have during the past month withdrawn their salesmen and have not solicited business, but, nevertheless, there has been very little reduction in the quantity of unfilled orders, as mail orders were received by nearly all companies up to 50 per cent. of production, and in some cases up to 75 per cent. A continuation of this condition may easily lead to higher prices, especially where early deliveries are required. Steel prices at New York on January 9th were:

#### STEEL PRODUCTS PRICES

Bessemer steel, per ton, mill	27 50	a28 00
Open hearth, per ton, mill	28 00	a29 00
Sheet bars, per ton	29 00	a30 00

#### STEEL BARS

Steel, soft base, half ex., tidewater	1 56	a 1 61
The above prices are at tidewater in carloads and larger lots. For quantities less than 2,000 lbs., but not under 1,000 lbs., \$2.00 per ton additional is charged, and less than 1,000 lbs., \$8.00 per ton additional.		

#### SHEETS

The following prices are for 100-bundle lots and over f. o. b. mill; smaller lots \$2.00 per ton higher.

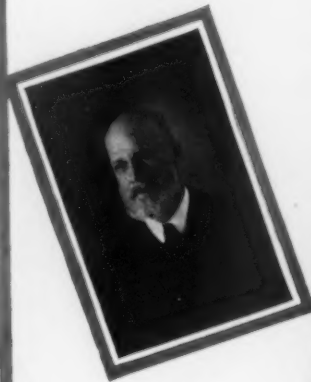
Guage—	Black	Galv.	Guage—	Black	Galv.
Nos. 22 & 24	2 10	3 05	No. 28	2 25	3 40
Nos. 25 & 26	2 15	3 15	No. 29	2 30	3 60
No. 27	2 20	3 25	No. 30	2 35	3 80

#### IRON AND STEEL AT PITTSBURGH

Bessemer iron	18 15	a ..
Bessemer steel, f. o. b. Pitts.	27 50	a28 00
Muck bars	31 00	a32 00
Skelp, grooved steel	1 45	a 1 50
Skelp, grooved iron	1 70	a 1 75
Ferro-manganese (80 per cent) seaboard	65 00	a75 00
Steel melting scrap	15 25	a15 50
Steel bars	1 40	a 1 45
Black sheets, 28-gauge	2 15	a ..
Galvanized sheets, 28-gauge	3 30	a ..
Blue annealed, 10-gauge	1 60	a ..
Tank plates, 3/4-inch and heavier	1 45	a 1 50
Wire rods	30 00	a31 00
Wire nails	1 75	a ..
Plain wire	1 55	a ..
Cut nails	1 70	a 1 75
Barbed wire, painted	1 75	a ..



# NEW THINGS NEW



On the pages following will be found descriptions of the new trucks which will be exhibited at the National Shows. Additional show matter will also appear in the February issue.

## COMMERCIAL CAR EXHIBITORS

Names of Manufacturers	Madison Square Garden	Grand Central Palace	Chicago
Adams Company			
American Locomotive Company			
Autocar Company			
Avery Company			
Atlantic Vehicle Company			
Atterbury Motor Car Company			
Baker Motor Vehicle Company			
Blair Manufacturing Company			
Bessemer Motor Truck Company			
Brown Commercial Car Company			
Buffalo Electric Vehicle Company			
Buick Motor Company			
Bowling Green Motor Car Co. (Modern)			
Chase Motor Truck Company			
Chicago Pneumatic Tool Co. (Little Giant)			
Clark Delivery Car Company			
Commerce Motor Car Company			
Croce Auto Company			
Dart Manufacturing Company			
Durant-Dort Mfg. Co. (Best and Flint)			
Dayton Auto Truck Company			
Federal Motor Truck Company			
Four Wheel Drive Auto Company			
Garford Company			
General Motors Truck Co. (G. M. C.)			
Gramm Motor Truck Company			
Gramm-Bernstein Company			
General Vehicle Company			
Grand Rapids Motor Truck Company			
Harder Auto Truck Company			
Hewitt-International Motor Vehicle Co.			
Hupp Motor Car Company			
Harwood-Barley Mfg. Company (Indiana)			
International Harvester Company			
Ideal Auto Company			
Kelly-Springfield Motor Truck Company			
Kentucky Wagon Mfg. Company (Urban)			
Kissel Motor Car Company			
Knox Automobile Company			
Koehler, H. J., S. G. Company			
Krebs Commercial Car Company			
La France-Hydraulic Truck Sales Co.			
Locomobile Company of America			
Lansden Company			
Lauth-Juergens Motor Car Company			
Lippard-Stewart Motor Car Company			
Mack Brothers Motor Car Company			
Mals Motor Truck Company			
Mercury Manufacturing Company			
Mack Car Company			
M. & P. Electric Car Company			
Mogul Motor Truck Company			
W. H. McIntyre Company			
National Motor Truck Company			
Old Reliable Motor Truck Company			

Names of Manufacturers	Madison Square Garden	Grand Central Palace	Chicago
Packard Motor Car Company			
Peerless Motor Car Company			
Pierce-Arrow Motor Car Company			
Pope Manufacturing Company			
D. F. Poyer & Company (Menominee)			
Randolph Motor Truck Company			
Reo Motor Truck Company			
Rowe Manufacturing Company			
Reliance General Motors Truck Co.			
Saurer Motor Co. (International Motor Co.)			
Selden Motor Vehicle Company			
Speedwell Motor Car Company			
Sanford Motor Truck Company			
Schacht Motor Car Company			
Service Motor Car Company			
Smith Company, A. O.			
Stegeman Motor Car Co.			
Sternberg Motor Truck Company			
Stewart Motor Corporation			
Studebaker Corporation			
Sullivan Motor Car Company			
Standard Motor Truck Company			
Sampson, Alden (U. S. Motor Co.)			
Universal Motor Truck Company			
U. S. Motor Truck Company			
Velle Motor Vehicle Company			
Walter Motor Truck Company			
White Company			
Ward Motor Vehicle Company			
Waverley Company			
Webb Company			
Walker Vehicle Company			



Foyer of the New Grand Central Palace

# AT THE YORK AND CHICAGO SHOWS



## The B. A. Grammm's Two, and Three and a Half Ton Models.



THE first trucks manufactured by the Grammm-Bernstein Company in its new plant at Lima, O., have recently been delivered. Two sizes are being constructed, a  $3\frac{1}{2}$ -ton model and a 2-ton model. Both trucks are designed along the same lines, such allowances being made, of course, as are required by their difference in carrying capacity.

### The Motor

The motor in the  $3\frac{1}{2}$ -ton truck is of the well known Continental make, having a stroke of  $5\frac{1}{2}$  in. and bore of  $4\frac{1}{2}$  in. It is of the 4-cylinder, 4-cycle type with the cylinders cast in pairs.

### Carburetor and Governor

A Schebler Model O carburetor is provided, which is hot air jacketed; exhaust gas from the manifold being passed around the mixing chamber. This type of carburetor is especially adapted for use with a governor, with which all of B. A. Grammm's trucks are provided. This governor is of the vertical fly ball type and will hold the speed of the motor below 1000 r. p. m. A  $1\frac{1}{2}$  in. carburetor is used on the  $3\frac{1}{2}$ -ton model.

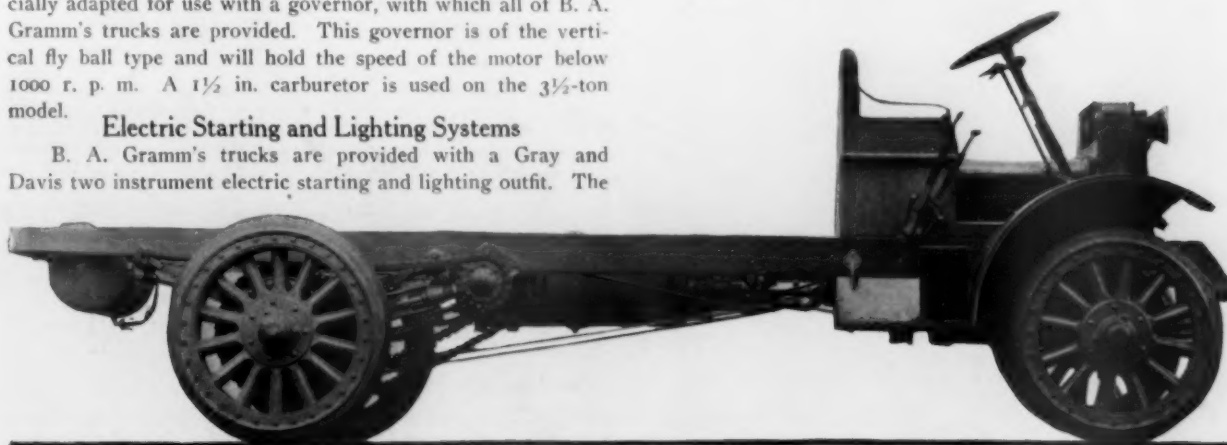
### Electric Starting and Lighting Systems

B. A. Grammm's trucks are provided with a Gray and Davis two instrument electric starting and lighting outfit. The

electric generator is mounted on the motor sub-frame and is driven from the pump shaft by means of a silent chain. The electric motor is mounted upon the engine base and through a train of gears and an over-running clutch connects with a gear mounted upon the fly-wheel. The electric generator furnishes current to a storage battery, which for starting duty furnishes current to the electric motor. After the motor is running the storage battery furnishes its current to an Atwater-Kent Unisparker.

### The Clutch

The clutch is of the dry plate multiple disc type. There are seven large discs and six small ones. The larger discs are made of steel and are driven by means of keys in the clutch housing. The smaller discs are also steel, but are faced in Raybestos and are driven through keys on the clutch shaft.



The Three and a Half Ton Grammm Chassis

The wheels employed on B. A. Grammm's Truck are of unusual staunchness and have twelve spokes at front and fourteen at the rear. A special hood protects the motor, located forward of the seat. The radius rod, of special design, is adjustable. The frame is somewhat wider at the center than at the ends, to give rigidity at that point.



The inner end of the clutch shaft is carried on a radial ball bearing, while between the shaft and the housing an oilless graphite bearing is used. The entire mechanism is protected by a strong semi-steel case and is mounted in the fly-wheel. No oil whatever is required and the only attention necessary is a little vaseline applied occasionally to the radial ball bearing. Driven from the clutch, the transmission is in a straight line through a propeller shaft and two Hartford universal joints.

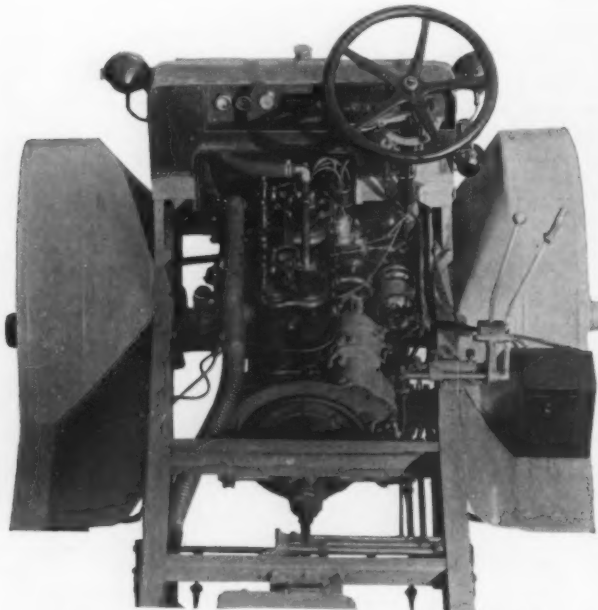
### Transmission

The transmission is a radical departure from former practice and offers many features which make it a very considerable improvement over other designs. It is of the selective type with the gears always in mesh. The different speeds are brought into action by engaging of hardened nickel steel dog clutches which have an ample face. In this way it is impossible to strip any of the gears through careless shifting. The primary and secondary shafts are carried on radial ball bearings, while the shafts themselves are made of nickel steel. The gears and the dogs on the primary shaft are not keyed in the ordinary manner, but a six spline shaft is used. When not in operation the gears rotate on roller bearings. The construction of the transmission is such that on direct drive none of the gears are rotating; thus reducing the wear and tear to a minimum. Four speeds forward and a reverse are provided and direct drive is on the fourth speed.

The differential is of the bevel gear type and is housed in the same case as the transmission. The entire case is carried on swivel joints, which take up to a large extent the strains due to irregular roads.

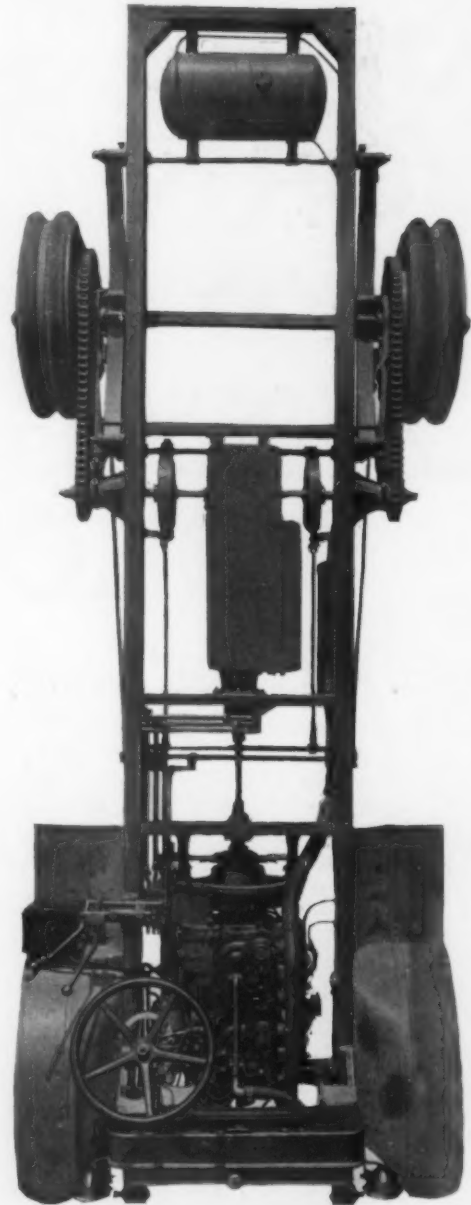
### Jack Shaft and Frame

The jackshaft is of the full floating type. It is supported from the main frame by large cast steel hangers which also



**Power Plant of the Three and a Half Ton Truck**

The motor, Continental make, has all valves located on the left side, these enclosed by cover plates to protect them from dirt. The commutator, electric starter and generator are all located on the right side, together with a pump. The electric wiring system is noticeable, with the batteries located on the right step.



**Top View B. A. Gramm's Chassis**

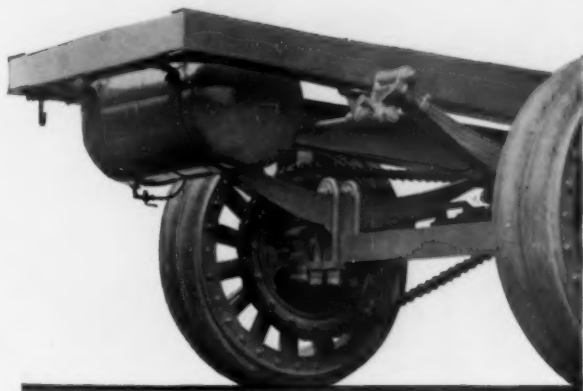
The frame, of channel section, is strengthened by cross members, which support the motor in front through a subframe, the four-speed transmission at the center, and the gasoline tank at the rear. The jack-shaft brakes are plainly visible, operating on special drums located inside of the frame. The control levers and mechanism are located on the right.

carry the jackshaft sprockets. These sprockets are mounted on radial ball bearings. Drive from the jackshaft to the rear wheels is by means of two roller chains.

The frames are of pressed steel, are tapered at the ends and deepest in the center. At the center of the frame the depth is 7 in. Numerous strong cross members are provided where needed.

### Axles and Brakes

Timken axles are used, both front and rear. The front axle is of I section and low slung so that the frame is much lower than often is the case. Timken roller bearings are used



**Rear Spring Mounting**

The rear springs are retained by spring clips bolted to the rear axle. Each spring leaf has its end slotted, to receive a projection on the leaf above, thus keeping them in alignment. The method of suspending the gasoline tank by means of a special band, attached to the rear cross member and to the spring bracket rod, is shown.

on the steering knuckles and on all the spindles. The rear axle is rectangular and Timken roller bearings are used on the rear wheel spindles as well as the front. Two strong radius rods take up the difference and are centered with universal joints at either end.

Four brakes are provided. Internal expanding brakes, faced with Raybestos, are used in the rear wheel hubs. The service brakes are external contracting and act on pressed steel drums mounted on the jackshaft inside of the frame.

### Steering Gear, Equipment, Etc.

A Ross worm and nut type steering gear is used. Spark and throttle levers are mounted on the steering column. The emergency brakes are operated by a lever at the right of the driver's seat, while the service brakes are operated by a foot pedal. The clutch is also operated in the same manner. Starting is accomplished by throwing the gear shifting lever into an additional position of the quadrant. In addition, on the dash are provided the switch, the ammeter for the storage battery, sight oil gages, carburetor air adjustment and pump for gasoline, pressure gage, etc.

The seat is directly behind the dash and on each side of the motor. This allows of the truck being built with a short overhang, but at the same time the seat is not placed so high but that it is easy of access.

Two electric headlights are provided; electric tail light, electric horn and electric extension lamp. The finish throughout is black and nickel. The tires are ample size, and in addition with the truck are furnished the usual equipment of tools, etc.

The 2-ton model follows closely the lines of the 3½-ton in general construction. A three speed forward and reverse transmission is used, but otherwise, except for size, there is little difference in the two models.

The manufacturers are in position to furnish any type of body which may be desired, or the chassis may be purchased without bodies. The price of the 3½-ton chassis is \$3400 and the 2-ton, \$2600.

### AUTOCAR COMPANY PLANS BIG EXHIBIT

Bringing from the factory at Ardmore, Pa., an impressive display of completed trucks, chassis and mechanical parts, the Autocar Company has planned an unusually large exhibit of its widely known delivery cars, this company having secured space extending the entire width of Madison Square Garden at the Fourth Avenue end.

Eleven chassis with nine different styles of bodies used on the 3000 lb. Autocar chassis will be exhibited. These include a standard furniture car, a standard stake car, a standard casket car, a combination freight and passenger car, a standard single-curve closed car with front sliding doors, a standard six post open delivery car of wheel pocket type, a special open express car, a standard 'bus and a special open delivery car.

There will be on display two stripped Autocar chassis, one showing the sectional details of Autocar construction and the other showing the exclusive Autocar feature of the raised seat structure.

### THE NEW CROCE TRUCKS

The Croce Auto Company, of Asbury Park, N. J., will show at the New Grand Central Palace its line of commercial cars which are made in four sizes, namely, 1500 lbs., two, three and five tons, the chassis of which list at \$1750, \$2800, \$3600 and \$4500 respectively.

Many well-known standard parts are used in the make-up of this new line of commercial cars, such as Bosch ignition system, Brown-Lipe transmission, Timken axles and bearings, Spicer universal joints, Wisconsin 22 h. p. motor, and Schebler carburetor.

### WALTER TRUCK EXHIBIT

The Walter Motor Truck Company, 49 and 51 West Sixty-sixth Street, New York City, will exhibit at the show its line of trucks, which include 1½, 2, 3, 3½, 5 and 6-ton sizes. The new features on the 3½, 5 and 6-ton sizes are left-side drive with center control, Westinghouse continuous torque transmission, service brake on differential with extra large expanding emergency brakes in the rear hubs, and semi-elliptic rear springs underslung with a long sweep.

### A NEW ONE-TON UNIVERSAL

Universal Motor Truck Company, Detroit, Mich., will show a new 1-ton worm drive truck, equipped with a 30 h. p. engine, having an overload capacity of ½ ton. It weighs 3300 lbs. The new truck has a wheel base of 130 in. The loading space is 10 ft. long, platform being only 3 ft. from the ground. Front doors are 34 x 3½, and rear 34 x 5. It has a full floating rear axle, Timken bearings, enclosed brakes, pressed steel frame, and other interesting features.

### THE BUICK COMPANY TO SHOW A ONE THOUSAND POUND DELIVERY WAGON

The Buick Motor Company, Flint, Mich., has been quietly at work building and testing a new truck, which it expects to build in quantities during the coming year. This truck is said to be in the neighborhood of 1000 lbs. capacity, and will be exhibited at the New York and Chicago shows. As its specifications have not yet been given the official O. K. of the company's designers, exact information cannot be given regarding the truck, which is now under daily test in Flint.

## New Kelly Commercial Cars

BY RICHARD WRIGHT



THE Kelly-Springfield Motor Truck Company, Springfield, Ohio, has recently brought out two new models. These are the K-30 with a normal load rating of one ton, and the K-40, rated as a 3-ton truck. Both models are equipped with four-cylinder, vertical water-cooled motors. The long stroke, slow speed type has been adopted and the motors themselves are built throughout in the Kelly-Springfield shops.

### Motor and Lubrication

The K-30, or one-ton truck motor, has  $3\frac{3}{4}$  by  $5\frac{1}{4}$  in. cylinders, the latter being cast en bloc with the valves all on the same side. A vertical ball type of governor is fitted, giving the truck a maximum speed of 15 m. p. h.

The lubricating system is of the constant circulating type and is accordingly entirely self-contained. It consists of a high pressure pump located in the bottom of an oil reservoir having a capacity of  $2\frac{1}{4}$  gallons in the case of the K-30, and  $2\frac{3}{4}$  gallons in the larger motor, the design of both of the power plants being along the same general lines. This pump is driven from the camshaft at half the motor speed through spiral gearing. The camshaft is hollow and this pump forces oil through it to the main bearings, connecting rod bearings, crank pins, wrist pins and pistons in a constant and liberal stream.

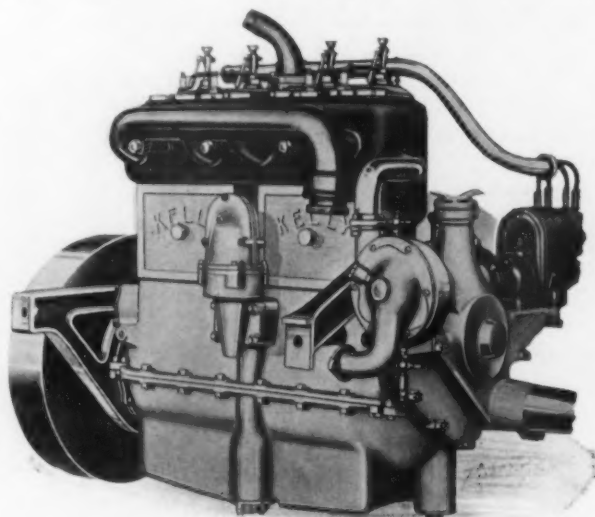
### Ignition

Ignition is provided by an Eisemann automatic advance type of high tension magneto. The magneto is mounted most accessibly at the forward end of the motor, where it is driven by a short transverse shaft. As the valve mechanism is all enclosed, this short shaft which also serves to drive the centrifugal water-circulating pump, is the only moving part visible. The motor is protected by a Renault type hood, lifting straight back and making every part accessible. This location of the magneto also removes it from risk of becoming

wet, either with water or gasoline. By lifting the hood only a few inches, the sight gage of the oil reservoir becomes visible.

### Cooling

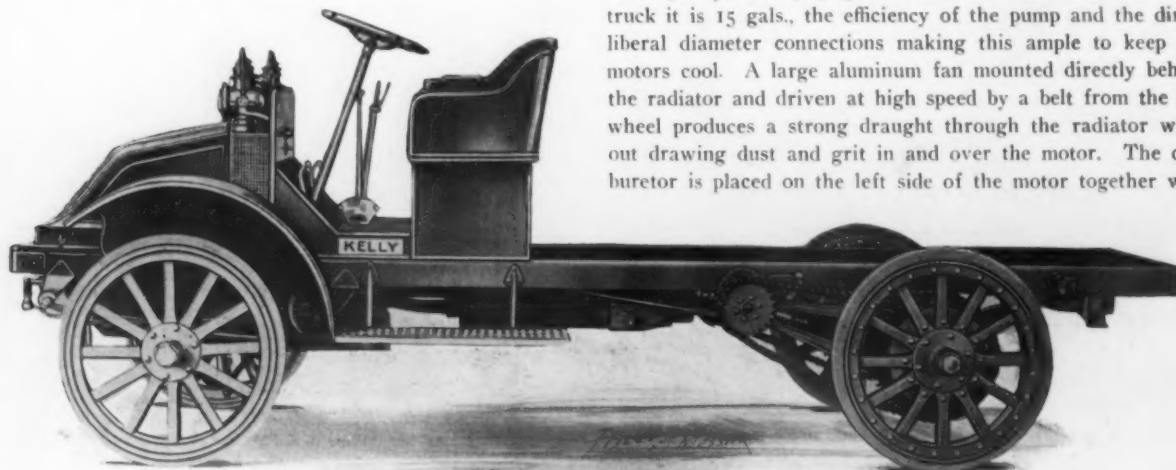
The radiator is of the vertical tubular type and is built as a part of the dash, being located directly behind the motor. It is flexibly mounted to protect it from road shocks



### The Kelly K-30 Motor

The Kelly Motor, employed on Model K-30, is of the T-head type with cylinders cast en bloc. The valves are enclosed by cover plates, thumb-nut retained. A governor is located on the working side, while the carburetor is located on the opposite side, with intake pipe running between cylinders. A transverse shaft at the front of the motor drives the pump and magneto, between which is located the breather pipe. Note the staunch brackets by which the motor is suspended.

and vibration. In the case of the smaller machine, the radiator capacity is only 9 gals., while in that of the three-ton truck it is 15 gals., the efficiency of the pump and the direct liberal diameter connections making this ample to keep the motors cool. A large aluminum fan mounted directly behind the radiator and driven at high speed by a belt from the fly-wheel produces a strong draught through the radiator without drawing dust and grit in and over the motor. The carburetor is placed on the left side of the motor together with



The Kelly One-Ton Chassis, Model K 30



the automatic governor, which is mounted on short vertical shaft and driven from the oiler gear through a small spiral pinion. This not only places the carburetor in the most accessible location, but makes the total length of the connection between the governor and the throttle less than one inch.

### Motor Differences

Apart from the difference in dimensions and power, the K-40 or three-ton truck motor is designed along the same general lines as the smaller power plant, except that the cylinders are of the T-head type and are cast in pairs. The cylinder dimensions of the K-40 are  $4\frac{1}{2}$  in. bore by  $6\frac{1}{2}$  in. stroke. The truck has a speed of  $11\frac{1}{2}$  m. p. h.

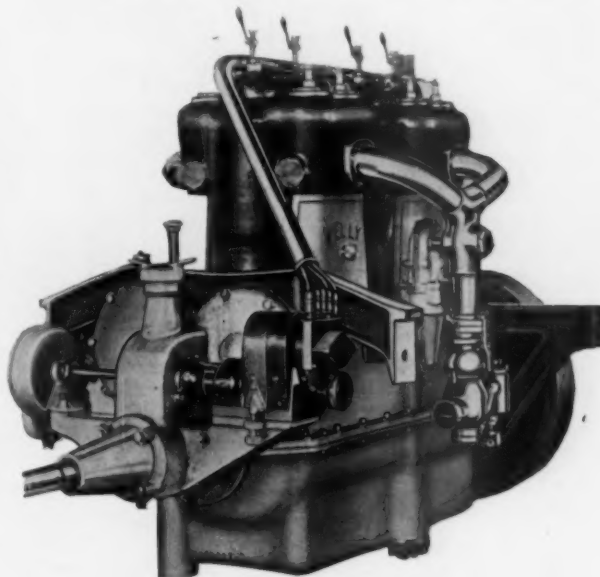
### Motor Suspension and Clutch

The principle of Kelly-Springfield chassis construction throughout is that of flexibility. The motor is mounted on a three-point flexible suspension, the forward end being supported at two points while the rear is mounted on a large swiveling support. No strain is allowed to fall directly on the crankcase by having the supporting arms cast directly on it, the forward support taking the form of a steel drop forging of I-beam section. The clutch is a well-worked out form of the conical, leather-faced type that has proven efficient and durable on Kelly trucks. Special chrome tanned leather is employed for the friction facing and the latter is held in engagement by a series of springs, placed back of the latter and insuring contact at every point with the bevel inner face of the flywheel. These springs are in addition to the usual single engaging spring employed with this type of clutch.

### Driving Mechanism

The motor and clutch form one flexibly supported unit while the gear-set and differential form another, both being combined on the jackshaft. The torque tube protecting the driving shaft connecting the clutch and transmission is also part of the latter construction, so that the power plant and transmission complete consist of but two compact and self-contained units, both of which are flexibly supported. A double universal forms the connection between the clutch and the driving shaft and takes care of all relative movement between the two. At its forward end, the torque tube is attached to the central cross member of the frame by a double swivel joint, while the front ends of the radius rods are mounted on the jackshaft on large ball and socket joints. Final

drive is by side chains, and equally careful provision for relative movement and flexibility is made at the rear end of the radius rods, by carrying them on double swivels at the rear axle, so that right from the driving wheels to the motor the construction is flexible. The power plant itself and every element of the transmission is mounted so as to yield to shock rather than resist it. This gives a more durable and at the same time a considerably lighter construction, as only one transverse member is necessary on the frame. This is the central brace which carries the swiveling support of the forward end of the torque tube. While the frame dimensions



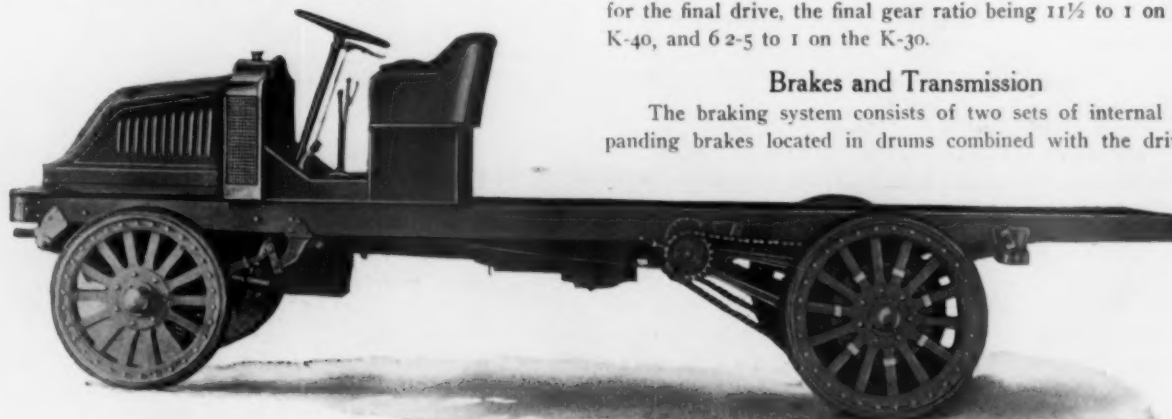
**Kelly K-40 Motor**

The motor used on the Model K-40 is of the T-head type, its cylinders cast in pairs. The valves are enclosed by covered plates, stud-bolt and thumb-nut retained. The governor can be seen located just above the carburetor operating a shutter in the intake manifold. At the front of the motor, transversely located, can be seen the magneto and pump. The breather pipe is also located in front, just over the forward end of the crank shaft.

are liberal, the one-ton truck frame being of  $4\frac{1}{2}$  in. channel section by 5-32 in. thick, and the three-ton, a 7 in. channel section,  $\frac{1}{4}$  in. thick, there is a minimum of bracing necessary, also of drilling and riveting, so that the frames are light and strong. Heavy roller type chains are employed for the final drive, the final gear ratio being  $11\frac{1}{2}$  to 1 on the K-40, and 6 2-5 to 1 on the K-30.

### Brakes and Transmission

The braking system consists of two sets of internal expanding brakes located in drums combined with the driven



**Kelly Three-Ton Chassis, Model K-40**



**Kelly Transmission and Jack Shaft**

Here is shown the transmission and jack shaft as a complete unit, bolted rigidly together by means of the housings. An inspection plate on the side can be removed, giving access to the gears. The transmission shafts are located above each other. The propeller-shaft housing is also rigidly bolted to the transmission housing.

sprockets, their dimensions being 16 by  $2\frac{1}{2}$  in. in the case of the smaller truck and 20 by 3 and 20 by  $2\frac{1}{2}$  in. on the larger, the service brakes having slightly greater area than the emergency. It will be noted that the transmission is of the type in which the shafts are placed one above the other, this lending itself particularly to the needs of the commercial car, as it permits of inspecting the gears and shafts simply by the removal of the side plate without the necessity of disturbing the load or having to provide a trap-door in the floor of the body. Three forward speeds and reverse are provided with selective operation. The bearings used throughout are the Hyatt high-duty and the Standard roller bearings.

#### Axles, Springs, Wheels, Etc.

Both front and rear axles are of the I-beam type consisting of chrome nickel steel forgings in the case of the rear, and with nickel steel steering knuckles and spindles at the front, the rear axle on the large truck being a special Kelly-Springfield design. The suspension consists of semi-elliptic springs front and rear, the dimensions being 40 and 42 in. on the smaller truck, and 48 by 3 in. front and 56 by 3 in. rear. The wheels are of the artillery type made with square spokes of 2 in. section in one case, and  $2\frac{1}{2}$  by 3 in. rectangular section in the other, all being fitted with S. A. E. demountable rims. The tire equipment consists of 36 by  $3\frac{1}{2}$  in. single solid front, and 36 by 4 in. single solid rear on the K-30, and 38 by 5 in. single front and 42 by 5 in. dual rear on the K-40. The tread of the former is 56 in. front and 60 in. rear, while the standard wheel base is 120 in., with an optional wheel base of 144 in. On the standard frame there is a distance of 9 ft. back of the driver's seat, and 12 ft. on the special frame. The fuel tank is located under the driver's seat and has a capacity of 15 gals. With full equipment, but without body the K-30 chassis weighs 3400 lbs., fifty per cent. of the chassis weight being carried on the rear axle, while 80 per cent. of the full load is carried there. The load distribution is the same on the K-40.

The standard wheel base of the three-ton truck is 150 in., with options of 120 or 172 in., or any intermediate length, while the standard chassis length is  $19\frac{1}{2}$  ft. over all. With full equipment but without body, the weight is 6800 lbs. The fuel tank has a capacity of 20 gals.

#### DURANT-DORT MODELS

The Flint Motor Wagon Department of the Durant-Dort Carriage Company, Flint, Mich., has brought out for 1913 a 1000 lb. delivery wagon to be known as the "Flint" wagon, which will be equipped with a four-cylinder motor, sliding gear transmission, double reduction live rear axle and shaft drive, together with the above will be exhibited.

#### LIPPARD-STEWART SPECIFICATIONS



IN describing the Lippard-Stewart 1500 lb. Delivery Car made by the Lippard-Stewart Motor Car Company, of Buffalo, N. Y., in our December issue, the description was by accident slightly curtailed. We are therefore printing the specifications that were omitted in the above description.

This model is powered by a 30 h. p. Continental Motor, lubricated by constant level force feed system. The cooling is by means of a centrifugal pump, with the addition of a belt driven fan. The radiator is mounted on coil springs. Ignition is by Eisemann high tension magneto while the carbureter is of the Rayfield type.

The clutch is of the cone type, leather faced with adjustable flat springs underneath, which allow gradual engagement. The cone is made of a steel stamping,  $15\frac{3}{4}$  in. in diameter by  $2\frac{5}{8}$  in. face.

Steering is from the left side with transmission and brake levers in the center. The steering device is of the irreversible worm and gear type, and is connected to the steering arm through a drag-link with ball and socket joints. The post is  $1\frac{3}{4}$  in. in diameter and is fitted with an 18 in. rim mounted on an aluminum spider.

A selective transmission with three speeds forward and one reverse is used. The gear shifting device is placed directly over the strong aluminum case. A special latch is placed on the shift lever so as to prevent accidentally changing to reverse while the car is in forward motion.

Both rear and front axles are of Timken type. The frame is of channel section, 5-32 in. thick. Springs are semi-elliptic front and rear. The tire equipment is  $35 \times 4\frac{1}{2}$  in. front and rear, pneumatic. This model will be featured by this company at its exhibit in the New Grand Central Palace.

In addition to its regular chassis, the Lippard-Stewart Company will exhibit a combination hearse and casket wagon, and a funeral director's casket wagon, both of which are claimed to be novelties in body construction.

#### DART EXHIBIT WILL INCLUDE NEW MODEL

The Dart Manufacturing Company, of Waterloo, Ia., will exhibit at New York three trucks, one of which is a new model, namely a 2000 to 3000 lb. machine, having a four-cylinder, 40 h. p. motor with multiple disc clutch, sliding gear transmission, left side drive, and center control.

The company's 1000 to 1500 lb. truck will be powered with a four cylinder motor, and will also have left side drive and center control. The above models have unit transmission and jack shaft, with shaft drive from motor to jack shaft and thence by chains to the rear wheels.

## Reo Introduces a Two-Ton Truck



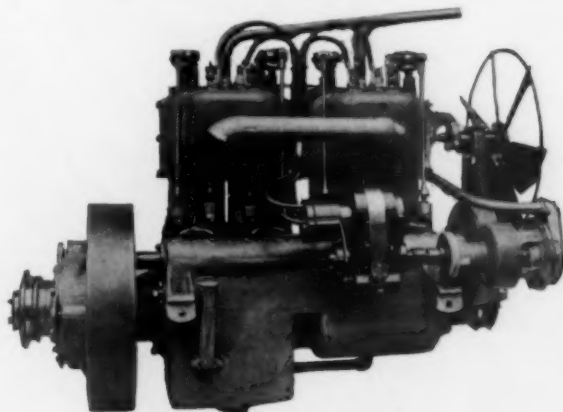
NEW two-ton truck is announced by the Reo Motor Truck Company, of Lansing, Mich., this called the 1½-2 model. Primarily the car is built to transport 3000 pounds, but the makers have figured for a liberal margin of safety, so that the vehicle will easily and safely dispose of a two-ton load. Every Reo truck of this model bears a name plate stating that the capacity is 3000 pounds and that the overload must not exceed 1000 pounds in addition to the rated load. In the main, the Reo two-ton truck follows standard practice with minor variations.

### Four-Cylinder Engine

The Reo two-ton truck is equipped with a four-cylinder motor, typical of Reo practice. Bore is 4 in., stroke 4½ in., suspension at four points to a pressed steel sub-frame. The exhaust valves are on the right, the intakes in the head, a construction previously featured in Reo pleasure vehicles. Cylinders are cast in pairs and the crank case is cast iron. The crank shaft, three-bearing type, has a 4½ in. flywheel end bearing, center being 2¾ in., front same dimensions. The connecting rods are 10½ in. long and of I-beam form. The timing gears are contained in a separate housing. The fan-spoked flywheel, 16¼ x 4½ in., is secured to a flange, this in turn keyed to the shaft. The magneto is located on the right side and is driven through a coupling from the water pump shaft, the pump itself located forward of the time gear compartment.

### Cooling

The Reo engine is water cooled, jackets formed integral with the cylinders, with centrifugal type pump, forward of the separate time gear housing. A feature of the cooling system is the neat type of fin tube cooler employed, this of Reo design so built that damage to a tube does not incapacitate the radiator for further service. Header, sides and base of this cooler are bronze, sides perforated to reduce the weight. The tubes are set on the vertical in pairs and held in place by 9-32 in. bolts and clamps. Tops of tubes are anchored in bronze castings, which seat against the bronze header, rubber gaskets fit-



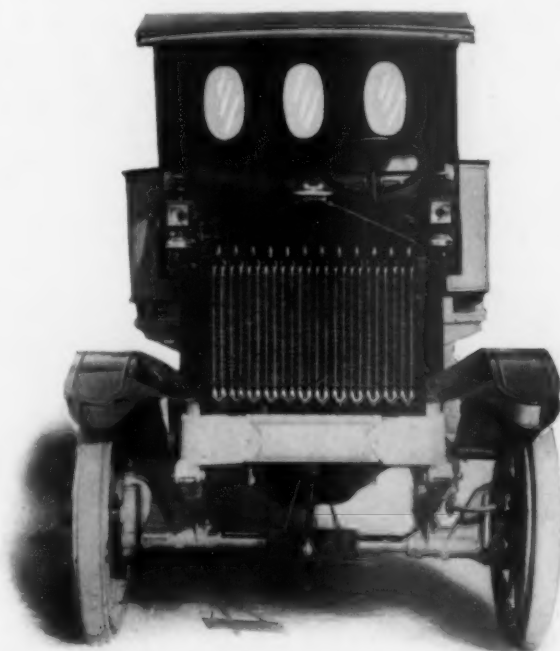
**The Four-Cylinder Reo Motor**

The exhaust side of the motor shows the valve-operating mechanism for both intake and exhaust valves. Intake valves are overhead, operated by push rods and rocker arms. The magneto is located on this side, as is also the pump, which is bolted to the timing-gear housing, forward of same. The timing gears are housed separately from the crank case. Spiders hold the push-rod guides in position.

ted to ensure a tight joint. In case a tube is damaged it is only necessary to plug up the lead to it and remove the tube. The radiator is secured to a cross member of the frame and rests on a wood filler, this ½-in. thick. A six blade, rim-bound fan is employed, this driven through a ¾ in. flat belt. An eccentric is used to adjust fan belt tension.

### Lubrication and Carburetion

Lubrication of the Reo truck motor combines a force feed and splash system. Oil is raised by a plunger pump from the reservoir of the barrel crank case to the main bearings. Troughs under the rods provide the splash dip, surplus oil drains back to the base or reservoir. A gage on the crank case denotes oil level.



**Front View, Reo Two-Ton Truck**

The front spring construction shows the spring pads, formed integral with the steering yokes. The fin-tube radiator is of special design, and is so constructed as to permit of the removal of tubes for repairs, not affecting the other members of the cooling system or even other parts of the radiator itself.

An automatic carburetor with hot air intake is used. In addition to this warming of the mixture the intake pipe itself is hot water jacketed. The manifold proper has no sharp bends or angles. A mixture lever is located on the dash.

### Hydraulic Governor

In order that the speed of the Reo two-ton truck may not exceed 12 m. p. h., a hydraulic governor is attached to the intake manifold. Water is led from the cylinder and acts against a diaphragm, and as this is lowered it actuates a piston valve which closes a series of round holes into the intake passage. All connections are solid and once the governor is sealed it cannot be tampered with. Adjustment of the governor is through a coiled spring by varying the tension.



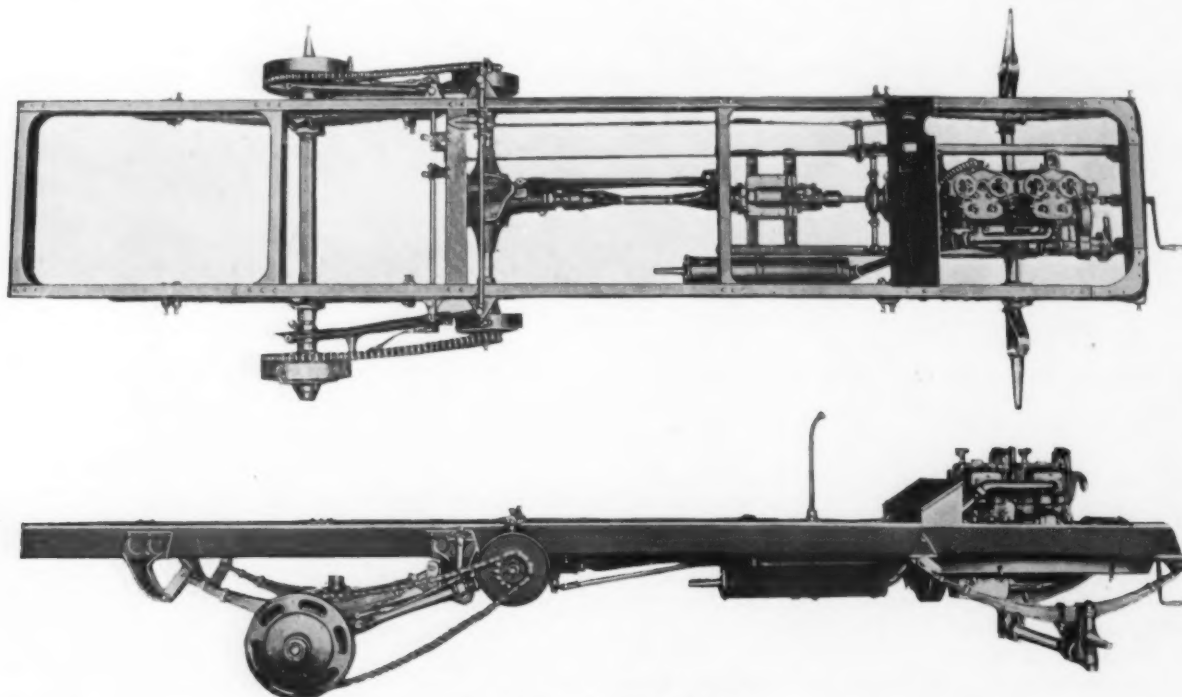
### Clutch and Transmission

The clutch is an assembly of discs, operating dry. Seven of these are plain steel, the remaining six faced with Raybestos, very compact and contained in the flywheel. A short shaft is interposed between the clutch and the gear box.

The transmission case is cast iron and is anchored at four points to the pressed steel sub-frame, which also carries the engine. There are three speeds and reverse, selectively controlled. All gears are  $\frac{7}{8}$  in. face, Timken bearings used on the upper shaft, Hyatt high duty roller on the lower.

### Axles

The front axle is a round hollow shaft, this straight throughout and  $2\frac{1}{4}$  in. in diameter. The steering yokes are steel forgings and to these the bar axle is secured, forced to position and further anchored by  $\frac{1}{2}$  in. pinch bolts. The front spring pads are formed with the steering yokes. The rear axle is a hammered forging, wheels mounted on extra large spindles, bearings Timken roller. Small diameter of steering spindles is  $1\frac{3}{4}$  in., large diameter, 2 in., in like order rear axle sizes being  $1\frac{3}{4}$  and  $2\frac{5}{8}$  in.



**Reo Two-Ton Truck Chassis**

An idea of the layout of the component parts of the Reo truck can here be had. The motor is supported by a subframe, on which is also carried the transmission. Drive from the transmission to jack shaft is through a propeller shaft, then by side chains to rear wheels. Springs, radius rods, axles and frame construction can also be seen.

The so-called cane handle control, which has been featured in Reo pleasure cars, prevails in the truck gear set. The handle is ball topped, but a short length of the rod protruding through the gate in the center of the driver's seat. The handle is curved just enough to make for free and easy action. The main shaft of the gear set is splined.

### Jack Shaft

Between the jack shaft and the transmission are two universal joints, leather booted and packed in grease. The propeller shaft is  $1\frac{1}{4}$  in. diameter. The torque arm, triangular in shape, is composed of two steel tubes, swivel jointed to the jack shaft housing, forward end of arm fitted with springs. Differential is bevel gear type, master bevel and pinion are  $1\frac{3}{8}$  in. face. Timken bearings are used in the differential, Hyatt rollers on the jack shaft. Support of the jack shaft is to brackets on the side rails of the frame. Drive to the rear wheels is through side roller chains to the rear wheel sprockets, which are riveted to the brake drums. Chains are  $1\frac{1}{4} \times \frac{5}{8}$  in.

### Frames

Frame is standard 6 in. channel pressed steel, side bars straight throughout. The rear cross members have integral gussets, and the corners, at the front end of the frame, are steel castings riveted to place. The front cross member of the frame, which serves as a sort of buffer bar, is inclined backward.

The side bars of the auxiliary frame extend from the front cross member to the center arched cross piece of the main frame. Cylindrical members are attached to the rear ends of the sub-frame and these contain rubber bumpers. The frame is allowed thus to compensate for road stress, and the motor and transmission is thus relieved. Through steel bolts are used to anchor the sub-frame at the rear.

### Springs, Wheels and Brakes

Front spring clips are  $\frac{5}{8}$  in. diameter, rear  $\frac{3}{4}$  in. Front springs, semi-elliptic, are  $2\frac{1}{4}$  in. wide,  $44\frac{1}{2}$  in. long; ten lipped leaves are used. The rear springs have 11 leaves  $2\frac{1}{2}$  in. wide and 42 in. long. The spring brackets are heavy castings hot riveted to the frame rails, springs fitted with side plate shackles.

The radius rods are staunch in construction, fitted with a knurled, adjusting nut forward. The main body is a steel casting and is swiveled at the rear. Forward there is a yoke so that the assembly allows for motion in two directions. The forward yokes are forgings.

Wheels are wood, artillery type, twelve  $2\frac{3}{4}$ -in. spokes front, fourteen  $2\frac{1}{2}$  in. spokes at the rear. Forward tires are  $36 \times 4$  in. single solid rubber, rear  $36 \times 3$  in. dual, or  $36 \times 5$  in. single solid rubber.

There are two sets of brakes, on jack shaft and rear wheels. Jack shaft brakes are operated by the clutch pedal and are  $14 \times 2$  in., contracting type. The emergency brakes are also foot operated and are  $17\frac{3}{8} \times 2$  in. Both brakes are faced with Raybestos, and the rear sets, like the front, are contracting type.

### Steering

Steering is through a sector and pinion form of gear, somewhat similar to that used on Reo pleasure cars. The elements are not enclosed as is the case with the usual types. At the end of the  $1\frac{1}{2}$ -in. steering post is attached a small bevel pinion and this meshes with an open sector or quarter gear. The steering post, which is fitted with an 18 in. wheel, is sup-

ported in a bracket carried on the left frame rail. The steering arm is  $1\frac{1}{8}$  in. across the flats; tie rod back of the axle is 1 in. diameter, fitted with adjustable yokes, drag link 1 in. small diameter, 2 in. large diameter.

### Control, Etc.

Control of the Reo truck follows the usual practice save that there is no emergency brake lever. The gears are shifted by the cane handle which works in an H gate in the center of the driver's seat. Ignition is from low tension magneto with spark plugs directly over the center line of the motor. Battery is auxiliary basis of current. Spark and throttle levers are located on the steering post.

Wheel base is 130 in., tread 60 in.; overall length is 200 in., dash to rear 162 in., platform length 115 in., platform width 62 in.

Regular equipment includes gas headlights, side oil lights, oil tail light, horn, tool outfit and jack.

Price of the Reo two-ton truck with driver's cab is \$1800; standard platform body is \$150 and the same for the standard stake body; prices all f. o. b. Lansing, Mich.

## THE NEW SANFORD ONE-TON TRUCK

At the Grand Central Palace, the Sanford Motor Truck Company, Syracuse, N. Y., will exhibit its one-ton truck with body, also a chassis and a sectional view of the motor to show its working parts. The one-ton model, which is the only size this company manufactures, is powered with a four cylinder, four cycle water cooled motor, having a bore of 4 in. and a stroke of  $4\frac{1}{2}$  in.



**The New Sanford One-Ton Truck**

The above illustration shows the one-ton Sanford truck which will be exhibited by the Sanford Motor Truck Company. Chassis of this truck sells for \$1600, and with stake or express body, \$1750.

The motor is fitted with an automatic sealed governor. The motor and transmission is a unit, mounted on three point suspension. The transmission is of the selective type, three speeds forward and one reverse, all gears mounted on Hess-Bright ball bearings. Ignition is by Splittorf high tension magneto. Lubrication is by self-contained system, oil pump being driven by the timing shaft. The clutch is of multiple disc type, and runs in oil. Brakes are fitted on the jack shaft and rear wheels. Frame is of channel steel. Wheel base is 106 in.; tread 56 in. Springs are semi-elliptic in front; platform rear. Tires are solid  $36 \times 3\frac{1}{2}$  in. on all four wheels. The equipment includes two side and one tail light, and a complete set of tools.

## LA FRANCE MANLY HYDRAULIC DRIVE WILL BE DEMONSTRATED

The Hydraulic Truck Sales Company, 1777 Broadway, New York City, will exhibit a truck equipped with the Manly hydraulic transmission. This truck will be set up so as to allow the rear wheels to run free. An electric motor will be employed to operate the driving mechanism through the fly-wheel, so that one can see the hydraulic transmission in actual operation. Parts of the Manly drive will also be on exhibition. This is the first time the La France truck and the Manly drive will be exhibited and demonstrated.

## NEW SIX-TON SMITH-MILWAUKEE TRUCK

The A. O. Smith Company, of Milwaukee, Wis., will display at the New Grand Central Palace, for the first time, its new six-ton model, also its  $3\frac{1}{2}$ -ton model which has been on the market for some time.

The new model is powered with a Continental four-cylinder, 60 h. p. motor, set on a three-point suspended sub-frame under bonnet in front of driver's seat. Ignition is by two independent systems with double sets of spark plugs. The transmission is of selective herringbone gear type with three speeds ahead and reverse, direct on high. Independent square jaw clutches with gears in constant mesh. The entire unit removable through top of case. The rear axle is of the full floating type with worm gear drive, is mounted in a pressed steel axle housing. The worm gear and differential are removable through rear of axle housing.

The gasoline tank, of 26 gal. capacity, is located under driver's seat. The steering gear is irreversible screw and nut type. The clutch is of the three-plate dry disc pattern with ball thrust bearing. Tires in front are  $36 \times 6$  in. single, and  $40 \times 6$ -in. dual rear. The speed of the truck is controlled by a governor which limits the speed to 9 m. p. h. The wheel base is 168 in. The standard length of body is 13 ft. The equipment includes storage battery, electric head and tail lamps and exhaust horn.

# The New Devon Models

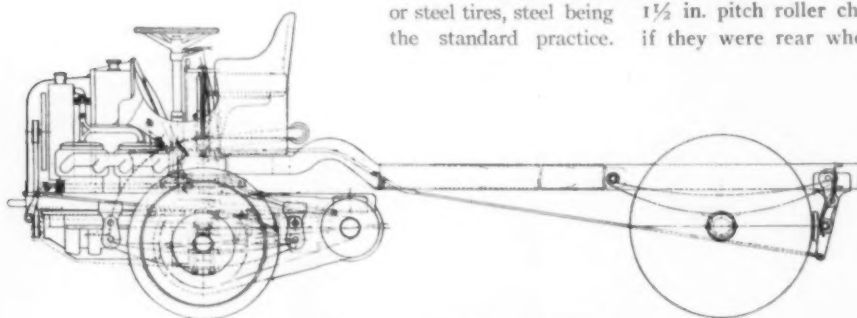
## The Devon Tractor Trailer



THE need for a front wheel driven motor truck of large capacity has finally resulted in the placing on the market by the Devon Engineering Company, of 512 Cherry Street, Philadelphia, Pa., a most unique vehicle known as the Devon Tractor Trailer.

This vehicle consists of a self-contained unit at the front end, composed of a dead front axle, front wheels which are the drivers, a four-cylinder engine, radiator, gasoline tank, hood, steering gear and front seat. The front unit is very compact, is steerable on what might be termed a fifth wheel, as the axle and wheels retain their alignment, when steering, and move together relative to the rest of the vehicle. Extending rearwardly from the pivot is the steel frame with a pair of steel wheels on a dead axle at the rear.

These rear wheels can be fitted with either rubber or steel tires, steel being the standard practice.



**Elevation of Devon Tractor Trailer**

This drawing shows the details of the front-wheel drive by enclosed chains from the jack shaft forward to the wheels

Upon this frame any kind of a body can be placed, but the construction is such that if desired, only the forward unit can be purchased with a few feet of the forward end of the frame so arranged that this can be attached to any kind of a vehicle after the front wheels of same have been removed. This makes it possible for a company to use its old vehicles which have suitable bodies for its work, thus converting them at once into motor-driven trucks

of 6 tons capacity, but at a cost very much less than any 6-ton truck could be purchased for. The major portion of the load is then carried on the old body with steel wheels, thus saving the cost of rubber tires. Such a combination vehicle is, of course, pulled by the power-driven front wheels, and not pushed from the rear, and thus requires less power to propel a given load, and does away entirely with skidding. Only 30 per cent. of total load is required to give full traction to the front wheels. The fixed front weight of the Devon Tractor, plus about 15 per cent. of the load weight only, gives all the tractive weight needed.

## The Fore-Wheel Power Unit

The arrangement of the fore wheel driven unit is as follows: The motor is placed lengthwise at the left, suspended from a structural steel frame with a radiator and fan at the right. These parts are enclosed in a metal hood. At the rear of this hood is the vertical steering column, and back of this a metal seat. The power is transmitted from the engine through a universal joint in the flywheel to the well-known Hele-Shaw multiple disc clutch, which is mounted in connection with the Devon transmission which is of individual internal-gear-clutch type, with two driving bevel pinions, so that both the second and highest speeds are direct and noiseless. This transmission forms practically a unit with what corresponds to the ordinary jack shaft, but is located just parallel to and behind the front axle. From the ends of the jack shaft the power is transmitted to each of the front wheels through  $1\frac{1}{2}$  in. pitch roller chains and sprockets exactly the same as if they were rear wheels. The chains are entirely protected

by a chain case as in the Devon trucks. This unit is turned bodily by means of the steering wheel, which through bevel gears rotates a worm, engaging the circumference of a large worm wheel attached to the forward part of the main frame, and, of course, concentric with the pivot. The worm is mounted between heavy coil springs on a splined shaft, so that road shocks are not communicated to the hand wheel.



**Side View of Devon Tractor Trailer**

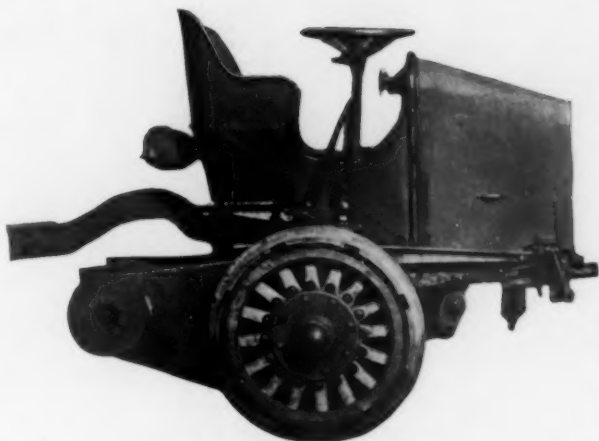
Showing the steerable power unit turned to one side. Front wheels are enclosed, chain-driven, body and rear wheels trail

The motor, clutch, transmission and jack shaft are all similar to those used in the Devon trucks, these important units being constructions which have been thoroughly tested. The novelty consists in the arrangement of these parts as a unit on the front axle, so that axle, wheels, engine, transmission, jack shaft, etc., turn with the front wheels.

## Three Sets of Brakes

Each of the driving wheels is fitted with 18 x 4 in. brake drums, the brakes being Raybestos faced, and of expanding type. These are controlled by the usual side brake lever. On





### Front End of Devon Tractor Trailer

A self-contained power unit with four-cylinder motor, transmission and jack shaft. Brakes on wheels and jack shaft.

the jack shaft there is also a set of drums 14 x 2 in. of similar facing and construction as those on the driving wheels, so that the unit is powerfully braked. If for special work it is found desirable, a third set of brakes can be used on the rear wheels. These may be of automobile type for the small cast steel wheels, or of ordinary wagon type if the rear end of an ordinary wagon is employed.

## Direct Drive on Two Speeds

The selectively operated speed gears are of large size, and are a cross between an individual clutch and the sliding gear system. There is one sliding gear on the countershaft which is used in obtaining the low speed. The usual idler is employed for the reverse. For the second speed, a sleeve which virtually forms an internal-gear-clutch is moved, locking one of the two bevel pinions to the main shaft of the transmission, which pinion is therefore rotated at engine speed, thus giving a direct drive. In a similar manner this pinion is allowed to run idle while a larger bevel pinion is engaged giving another direct drive on the high-speed. There are, of course, two circles of bevel teeth with which these bevel pinions mesh; when one pinion is driving, the other is still in mesh but simply running idle. This change speed mechanism is unusually compact and as before mentioned is practically a unit with the jackshaft assembly, that is, the housings are bolted together.

## Springs

The springs are of semi-elliptic type front and rear, the front springs being 44 in. from center to center. The rear springs on the standard chassis are of similar type but sized according to the load to be carried, while if an ordinary wagon is used no spring changes are necessary. The road clearance of the vehicle is 9 in. The wheel base is, of course, variable according to the type of body used, and can be anything within wide limits.

### Body Dimensions

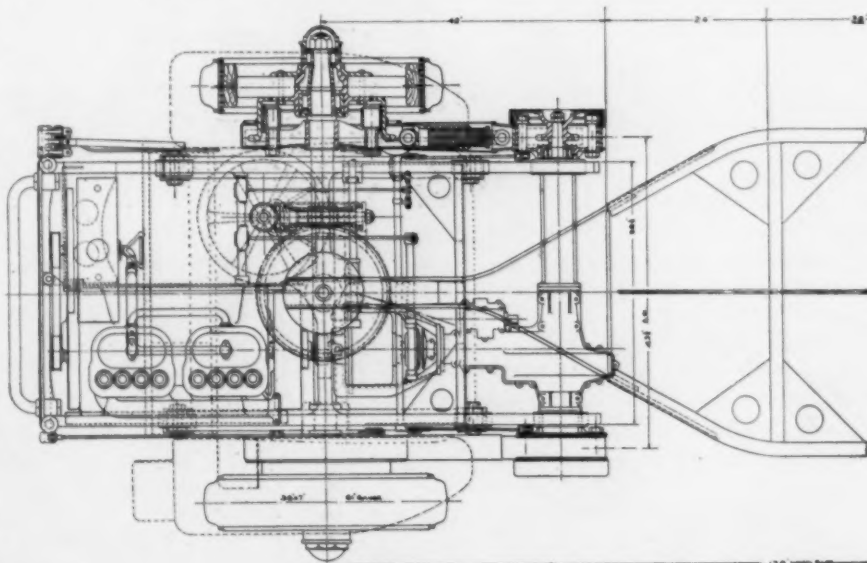
The chassis weighs 7000 lbs., and with the standard body gives a loading space of 12 ft. by 5½ ft. The maximum speed is 8 m. p. h., which is ample for a 6-ton machine with the load on steel tires.

## Motor

The engine, which has a bore of  $4\frac{1}{8}$ , and a stroke of  $5\frac{1}{4}$ , is rated at 27.23 h. p. This engine is a unit construction cast en bloc, and is similar in every respect to that used in the  $3\frac{1}{2}$ -ton Devon truck. It is mounted at two points at the front, and a single point at the rear. Cooling is by centrifugal pump, ignition by Bosch dual system, and a Stromberg carburetor is used.

## Devon Trucks for 1913

The Devon Engineering Company will continue to manufacture the Devon truck, which has been in constant active road use now for two years. These trucks are of  $4\frac{1}{2}$  tons capacity with a powerful motor of  $4\frac{1}{2} \times 5\frac{1}{2}$  in., mounted under the hood at the front. The changes for the coming year are more in the nature of refinements than changes. Briefly, they may be summed up as follows: The entire design has been gone over and lightened wherever possible without sacrificing strength. Slight changes have been made in the castings, and other things have been done so that the weight has been cut down in the neighborhood of 400 lbs. The bulky carbon steel springs have been replaced by a special alloy steel, which gives a more resilient spring of less weight. The frame strength has been preserved by doing away with all holes and rivets passing through the upper and lower flanges, all castings and other parts being now attached to the frame by rivets through the side. The U-bolt used at the end of the jack shaft has been done away with, and there is now a bearing underneath the jack shaft attached to a flange. The chain case is somewhat cleaner in design, being made of two malleable iron castings.

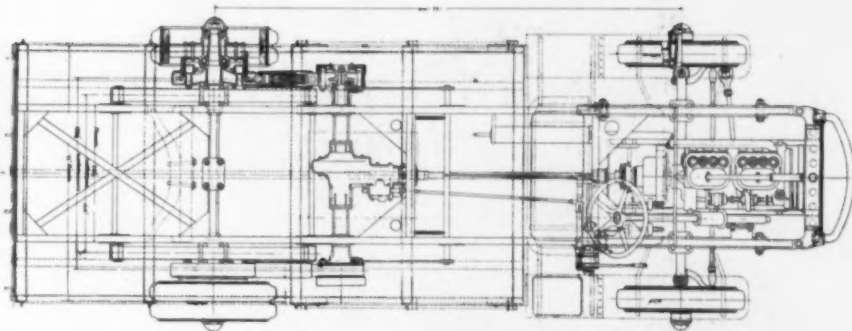


### Plan of Devon Tractor Trailer

Steering is by hand wheel operating a worm meshing with a large worm wheel concentric with the pivot and rigidly attached to the trailer portion. The worm is mounted between stiff coiled springs to prevent road shocks reaching the steering wheel.

The change speed gear is practically the same as that used in the tractor. It has been strengthened by enlarging the secondary shaft. As described in connection with the tractor, this transmission gives a direct drive on both the second and third speed through bevel pinions and large bevel gears. The toothed rings of these two large gears are now tempered, giving them longer life.

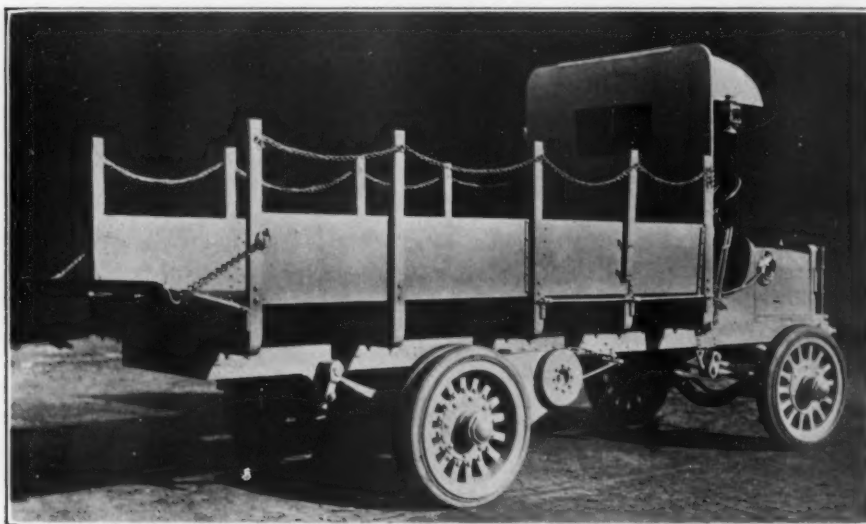
The special features of this truck are: staunch construction, unusually liberal-sized parts being employed for  $4\frac{1}{2}$ -ton truck; water-cooled motor, this being a Continental model E; it is of 4-cylinder type cast in pairs, centrifugal pump, 4-bladed fan of stamped steel, and a square tube radiator mounted on springs. An oil level indicator is provided. Ignition is by Bosch dual system with two sets of plugs. The top part of the L-type cylinders is removable by means of hexagon cap screws. The Stromberg carburetor is standard equipment. The well-known Hele-Shaw multiple disc clutch with its case bolted to the engine case forms with the motor a 3-point suspended unit on a special sub-frame. The change speed mechanism is also 3-point suspended, the rear points being the



**Plan of Devon Truck**

Showing arrangement of motor, Hele-Shaw clutch, change gear, etc.  
Special radius rod and chain case

agency brakes are located on each end of the jack shaft. Service brakes are of the expanding type on drums, bolted to the rear wheels. Both sets are Raybestos lined. The front tires are  $36 \times 6$ , and the rear  $36 \times 5$  dual. Semi-elliptic springs are used front and rear, with a spring extending crosswise of the frame as auxiliary. This is semi-elliptic, 8-leaved, and only comes into action with exceptionally heavy loads. Steering is by heavy duty Ross gear. The wheel base is 132 in. All sizes from ground up—tires, wheels, axles and bearings, springs and frame—are unusually robust and good quality.



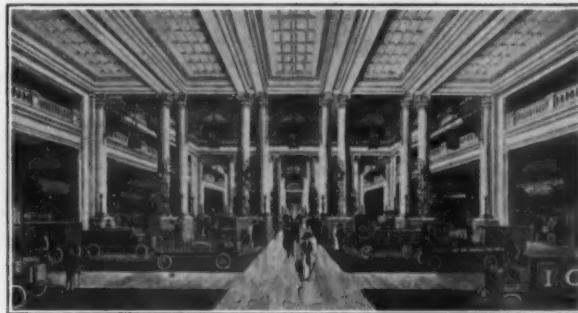
**Devon Truck**

Showing new body construction, with steel bottom and sides. Metal cross members bent up to support sides

jack shaft outboard bearings, while the third point at the front is supported by a swivel joint, 10 to 1 on third, 5 to 1 on second,  $3\frac{1}{2}$  to 1 on high, are the gear ratios respectively between the engine shaft and the jack shaft and a further reduction of 3 or  $3\frac{1}{2}$  to 1 is made by the chains and sprockets. A universal joint is supplied in the clutch and another just forward of the transmission. Whitney chains are used for the final drive, and operate in the chain cases above mentioned. The radius rod is also a special design which gives ample leeway for adjustment, and takes care of all movements of the axle relative to the body. The front axle is of Sheldon construction, while the rear is a square forging of  $3\frac{1}{4}$  in. on each side. The emer-

### Special Body Construction

The body also shows original thought in its construction. It is practically of metal, the floor being made of a single piece of 3-16 in. sheet steel. The side pieces, front and tail board, are of the same material and 18 in. in height. This sheet steel structure is supported 7 in. above the rear wheel by means of five 3-in. Carnegie channel steel cross members, which are bolted to the main frame, and the ends of which are upturned to a height of 18 in., thus forming the supporting members for the sides. These channels are filled inside with hardwood blocks. On top of the metal cross frame members and running longitudinally are three heavy wooden beams which extend the entire length of the body, and to which the metal flooring is secured.



**Interior View of the Grand Central Palace**

## TIMKEN COMPANY INTRODUCES DAVID BROWN TYPE OF WORM DRIVE

An alliance has been made between the Timken-Detroit Axle Company and David Brown & Sons, of Huddersfield, England, for the purpose of supplying the American market with the David Brown type of worms. A new corporation, to be known as the Timken-David Brown Company, will make and sell worms and worm gears for pleasure and commercial cars.



The Worm and Gear Used in the New Timken-Detroit Worm-Drive Axle

The plant of the Timken-David Brown Company will adjoin that of the Axle Company, Clark Avenue, near Fort Street, Detroit, Mich. A building is now in course of construction. Pending completion of the plant and the manufacture of special machinery in England, the worms will be imported.

At the New York and the Chicago Shows the Timken-Detroit Axle Company will exhibit for the first time to the public its worm-drive axles for pleasure and commercial cars. A strictly commercial-truck worm-drive axle will be shown for

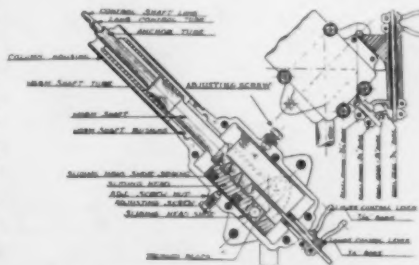
1½ to 2-ton work. Besides the finished axles, the worms and gears will, of course, be shown.

There will be an exhibit of the Timken-Detroit Company's full line of bevel-gear rear axles, jackshafts, dead rear axles and complete rear equipments as well as the line of pleasure and commercial front axles. Several new features of the 1913 models will create considerable interest as well as the addition to the line of a larger commercial front axle than any hitherto made and a combination transmission and jackshaft.

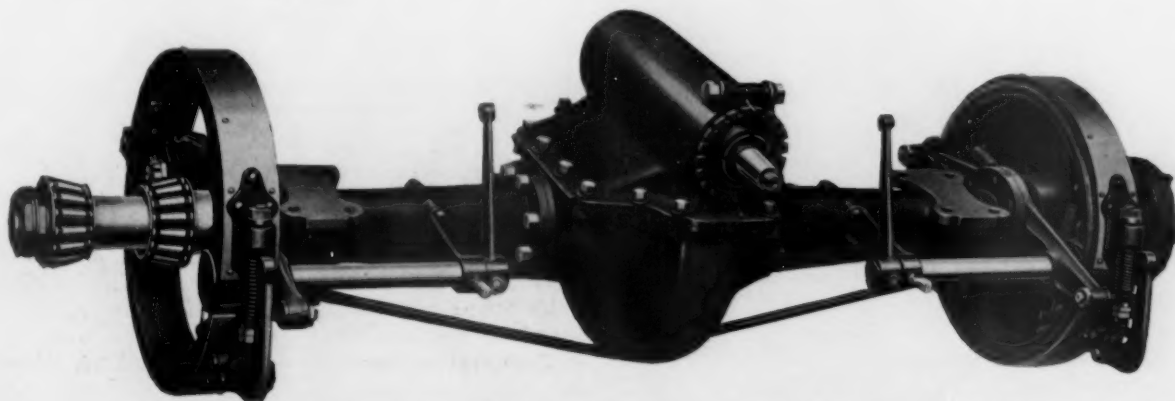
## LAVIGNE STEERING-GEAR IMPROVEMENTS

The Lavigne Gear Company, Racine, Wis., will exhibit a line of its steering gears, showing the latest improved models. The latest improvement is shown in the accompanying cut, and is in the form of two set screws, one entering the case from each side, each set screw made with a cup end, and hardened, and in this is placed a hard steel ball, allowing 1-16 in. of the ball surface to extend beyond the end of the screw. When the gear is made up new, these set screws are set up so that the ball just touches the steel gibs in each side. When it is necessary to take up any slack, a quarter turn on both set screws will set the balls up about .0035 in., this putting a slight pressure on the side of each sliding head which takes up any slack there may be and at the same time permits the sliding heads to move easily on the screw without lost motion or jar.

These screws each have 28 threads to the inch, so that the finest kind of an adjustment can be made, and are held in place when the adjustment is made by means of a jam nut set down right on a spring washer. As the thread of the worm shaft and in the sliding heads is ¾ in. pitch and cut on an angle of 29 degrees, it makes the ball arm irreversible and with the added improvements, the changes of material and the addition of a supplementary means of taking up the wear, the gear is of superior quality.



Sectional View of the Lavigne Steering Gear, showing new improvements



The New Timken-Detroit, David Brown Type of Worm-Drive Axle For Commercial Cars



## THE HARTFORD STARTING AND LIGHTING SYSTEM

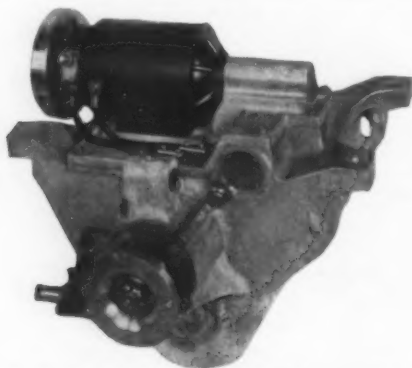
This system, which will be exhibited by the Hartford Suspension Company, of Jersey City, N. J., is distinctive in that the generator and motor are separate and distinct, although energy for the motor is supplied by the same battery, charged by the same generator.

The Hartford lighting generator is a very neat, compact machine. The battery is floated on the line and the generator



View of the Transmission Case With Cover Plate Removed; showing the large worm gear which meshes with a worm on the end of the armature shaft of the motor. The reduction here is twenty-five to one. Mounted upon the same shaft as the large worm gear member, is a spur pinion which is in mesh with a large spur gear which is secured to the main shaft of the motor car.

is provided with a governor which operates at a car speed of approximately 14 m. p. h. The system also includes a cutout which disconnects the generator from the battery when the amperage falls below a certain car speed, and cuts in the generator when it develops the proper amperage. The system makes for simplicity, including as it does, a generator, battery, switch, fuse box and cutout. The latter with voltmeter and ammeter are mounted upon a neat base for attachment to the dash.



The Hartford Starting and Lighting System; which is shown mounted on top of the transmission case

### The Hartford Motor Starter

The illustrations accompanying this article show the latest design of the Hartford electric starter as applied to the top of a transmission and geared direct.

The motor itself weighs 20 lbs. and is rated at 1-3 h. p. It is designed to operate at high speed, about 7000 r. p. m. This

does not mean that the fly-wheel of the explosive engine is rotated at this high speed; in fact, it is revolved very much slower, varying from 40 to 70 r. p. m., this depending upon the design of the gasoline engine. This reduction of speed is obtained by a combination worm and spur gear.

The efficiency of the small motor is augmented by the utilization of a small fly-wheel weighing about 4.5 lbs., which is mounted at the end of the motor shaft. Its function is to assist the motor when the compression point is reached, to keep the speed of the electric motor constant, to economize battery current and to lessen the chance for a premature explosion.

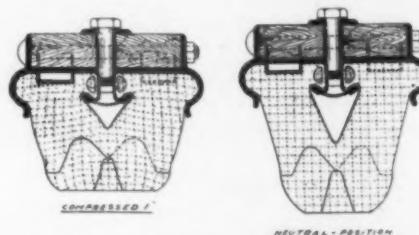
The gears are always in mesh, eliminating any possibility of stripping. In the large gear is fitted a positive roller clutch, which engages in starting and automatically disengages when the explosive motor starts. It is equipped with ball bearings upon which it rotates, but the gears which are always in mesh become stationary. The worm gear is not keyed to the shaft of the motor, but is secured by a friction disc and spider spring, similar to the member used on the Truffault-Hartford shock absorber. The function of the device is to dissipate the force of a back kick, undue strain or injury to the starter, so that if a back fire should result, the starter's shaft would simply slip around.

The 12-volt storage battery employed with the lighting system and maintained in a fully charged condition by the generator, supplies current to the starter, which consumes between 200 and 225 Watts, this depending upon the design of the car. The mere pressing of a button located upon the dash or other convenient place, connects the battery to the motor, which spins the fly-wheel of the gasoline engine. When the latter starts the clutch automatically releases as previously pointed out.

## THE OVERMAN CUSHION TIRE

The Overman cushion tire, to be exhibited by the Overman Tire Company, 250 West Fifty-fourth Street, New York City, is built on the principle of the absorptive power of rubber.

The cross section of the Overman cushion tire shows a continuous internal triangular shaped cavity. As the load is applied, the rubber displaces its bulk inwardly, due to the in-



Cross Sections of the Overman Cushion Tire, in Neutral Position and Compressed

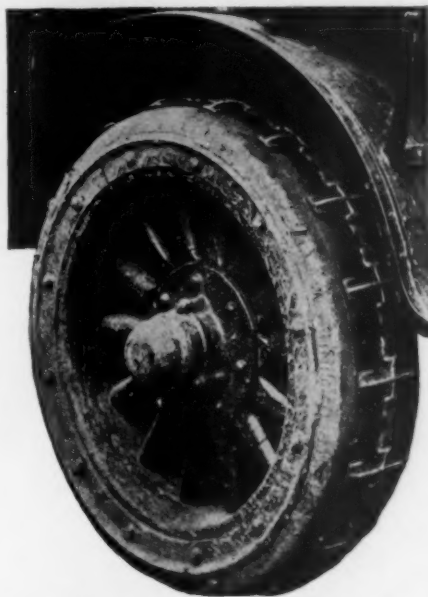
ternal cavity and the proper relative angles bounding the side walls, eliminating any possibility of the tire bulging.

A special rim is used, equipped with square locking blocks. These square locking blocks provide a double constricted neck, on the inside with the clincher plate and on the outside with the flange, preventing the tire from pulling off the rim. Two outside flanges are bolted through the felloe to protect the base of the tire.

Deep grooves alternating on the right and left side of tread, and an opening in the center near the rim, allow ample space for the rubber to compress.

### NEVER-SKID DEVICE FOR SOLID DUAL TIRES

The Never-Skid Manufacturing Company, 210 West 50th Street, New York City, will exhibit Never-Skid device for dual tires, which consists of a series of interlocked links, each with a lateral projecting wing, connected to form an endless chain, held securely between dual tires. The links are connected by a double shear pin joint, and the chain has two quickly adjustable links, to take up slack. The winged links have a wedging contact with the tires and a projecting cross,



Never-Skid Device as Applied to Dual Tires

which serves the double purpose of giving positive traction and prevents skidding. The device is so constructed that it will creep on the tires, thus constantly changing its position. The links are so arranged that one of them always clutches the road surface. There is no slipping from one link to another, eliminating bumping or uneven riding.

The material from which the ribbed links are made, is a special grade of malleable iron. The connecting links are drop forgings, case hardened. The pins used to connect links are made from carbon steel, case hardened.

### STANDARD WELDING COMPANY'S EXHIBIT

To illustrate the possibilities of electrical welding, the Standard Welding Company, Cleveland, O., will exhibit a settee built entirely of electrically welded tubing, made of stock bent parts, such as exhaust tubes, manifold pipes, steel steering handles, strap hangers, robe rails and windshield tubing, securely fastened together by every form and method of welding. There will also be exhibited a display board showing the finishing possibilities of its steel windshield tubing, also the well-known Stan-weld rims.

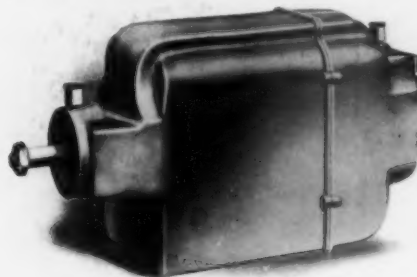
THE SCHWARZ WHEEL COMPANY, of Philadelphia, Pa., will exhibit during the commercial car week a line of very heavy truck wheels. This concern will also show a number of specimens of the several characters of timbers used in the construction of these wheels, also different parts in the course of construction. A line of special felloes will also be shown.

### DISCO ELECTRIC STARTER

The Ignition Starter Company, of Detroit, Mich., is bringing out a two-unit system, including motor, generator and storage battery for lighting and starting, in addition to its well known acetylene product. The motor and generator units are of identical shape and dimensions, and, as shown in the cuts, are of peculiar shape, being very flat, therefore readily attached to any make of engine.

One of the main features of the Disco generator is its self-regulating feature without the use of any mechanism in the shape of resistance coils or similar devices used for controlling the output. At about 7 m. p. h. the Disco generator produces sufficient current to begin charging a 12-volt storage battery and at 15 m. p. h. its output is sufficiently great to carry the entire lamp load and an additional amount for charging the batteries for operating the starting motor. At 20 to 22 m. p. h. it reaches its maximum output, and at speeds higher than this the current from the generator remains constant until in the neighborhood of 35 m. p. h., when the current production gradually falls off. This regulation is effected by the peculiar construction of the pole pieces and the windings of the machine.

Both generator and motor are entirely encased in aluminum covers, making them water and dustproof, and are fitted with the highest grade ball bearings. By loosening a screw the entire working parts of either machine are exposed for examination or adjustment. The motor unit is of series wound type, standard construction.



The Disco Electric Generator

The charging of the batteries by the generator is entirely automatic and handled by means of a magnetic cut-out. This automatic switch connects the generator to the storage batteries when its output reaches a point sufficiently high to charge the battery. It maintains this connection until such a time as the output of the generator falls to such a point that it is not sufficient to charge the battery, at which time it automatically disconnects the battery from the generator.

### COTTA TRANSMISSION IMPROVEMENTS

The Cotta Transmission Company, of Rockford, Ill., will exhibit its well-known line of transmissions and control levers, which embody several improvements in detail of construction. All gears, that at times run idle, are now mounted on roller bearings, while chrome nickel steel is used throughout. The use of pivoted shifting forks with hardened rollers, mounted on hardened pins, running in the groove of the sliding clutch, is said to overcome any tendency towards disalignment due to wear or bending of the forks. Each fork is now provided with a positive finder.

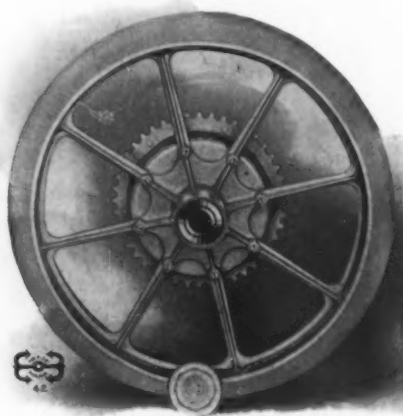
### SHELDON 1913 ANNOUNCEMENT AND EXHIBIT

The Sheldon Axle Company, of Wilkes-Barre, Pa., has completely revised its complete line of axles, brakes and jack shafts, by adding many refinements.

To meet the new requirements of a non-adjustable bearing, the Sheldon Axle Company's announcement of a complete line of commercial front and rear axles equipped with steel wheels or hubs for wooden wheels, with an option of the finest domestic or foreign bearings, is a decided innovation in the automobile industry. Thus the engineer is given the opportunity of buying standard axles of quality, with his choice of the following domestic or foreign bearings: Standard Taper Roller Bearings, Bower Straight Roller Bearings, New Departure Double Row Annular Bearings, Rhineland Double Row Annular Bearings, F. and S. Annular Ball Bearing, Hess-Bright Radax or Norma, Single Row Ball Bearings.

#### Sheldon Axles

The front axles are one-piece drop forgings, I beam bed with integral spring pads. Wide opening of the yokes, with thrust bearings between the steering knuckles and yokes, make



Sheldon Steel Wheel

easy steering. The pivot bolts revolve in Tobin bronze bushings at both points of the yoke and are lubricated by independent racket grease cups, thus reducing friction to a minimum.

The rear axles are one-piece solid rectangular bed forgings with integral spring pads. The option of steel wheels or hubs for wooden wheels with a choice of bearings is an unusual offer. If at any time a user desired to change the bearings, any combination could be made without changing a single axle, steel wheel or hub.

#### The Sheldon Steel Wheel

The Sheldon Company is offering a new steel wheel which is illustrated herewith.

The illustration gives a fair idea of the appearance of this wheel, and the way of attaching the drums and sprockets to the rear wheels. The demands for a choice of bearings has prompted the company to design these wheels to accommodate the bearings previously enumerated.

#### Sheldon Worm Drive W-I With Steel Wheels

The Sheldon worm drive axle is equipped with David Brown & Son worm gears, mounted on Rhineland double row annular bearings. The differential star and gears are nickel steel, heat treated, and are mounted on New Departure double row annulars. Axle shafts are nickel steel, heat treated and equipped with New Departure double row annular bearings for steel wheels or hubs for wooden wheels. The brakes are internal and external with 16 in. drum bolted to the steel wheels. The internal brake is the expanding type, self-intensifying. The external is the wrap-up type, both simple and very effective.

#### VALENTINE & COMPANY'S EXHIBIT

This well-known varnish and color manufacturing concern will exhibit a chart which will show a great number of new automobile colors, including many of the dark blues and maroons so popular this year. The company will again demonstrate the soap-proof quality of its Vanadium Chassis Finish and will distribute a book, "The Care of the Car," which contains a novel method of showing colors on an automobile.

#### THE HESS-BRIGHT BEARING DISPLAY

Several improved styles of ball separators to be adapted to special requirements, will be exhibited by the Hess-Bright Manufacturing Company, of Philadelphia, Pa. A feature of the exhibit will be a group of machine tools equipped with Hess-Bright ball bearings and driven by an electric motor, and their special high speed type and double row type bearings will be featured.

#### HIGHLAND BODIES

The Highland Body Company, of Cincinnati, Ohio, will exhibit at the shows a line of standard bodies for motor trucks. This company's bodies were described in detail in our October, 1912, issue on page 58.



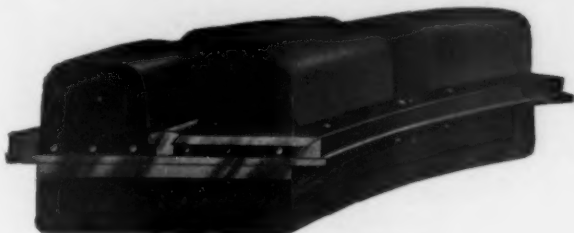
The Sheldon Rear Axle and Worm-Drive Assembly



### GOODYEAR DISPLAY OF TRUCK TIRES

Two new tires for commercial cars will be featured by the Goodyear Tire & Rubber Company at the big shows, namely a Demountable Cushion Tire and a Solid Side Flange Tire.

The Demountable Cushion tire is intended especially for high speed trucks of all carrying capacities. This tire is



The Goodyear Individual Block Tire

designed to attain resiliency by means of its dual treads, which readily give; by slantwise bridges which act as hinges; and by its undercut sides, which provide the necessary space for the displaced rubber.

The Solid Side Flange tire was designed to attain a "fixed on" type of tire whose application is practical to the S. A. E. wheel. It is to be used where the "fixed on" type is preferable to the demountable type. The Clincher profile is made on the S. A. E. felloe band and side flange.

Another recent product of the Goodyear Company is the Individual Block Tire, which is adapted to heavy duty trucks that require exceptional traction and non-skid feature on rear wheels. The individual block feature is designed to save time in repairing a tire.

### CRAMP WORM-DRIVE CASTINGS

The Wm. Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa., will exhibit for the first time worm wheels and castings of gear bronze for worm gear rear axles. They will also show complete Hindley Type worm gear rear axles, the worm wheel and housing castings being by them.

The Cramp Company will also exhibit Parsons' manganese bronze castings, for parts requiring strength and lightness, such as levers, lamp brackets, transmission cases, connecting rods, brake bands, etc., and Parsons' white brass bearing castings.

### HYATT ROLLER-BEARING EXHIBIT

The Hyatt Roller Bearing Company, of Detroit, Mich., will exhibit a complete line of its High Duty and Standard bearings. The latter bearing has been slightly improved in that the rolls formerly made of high carbon steel are now all made of chrome nickel steel, properly heat treated and ground to close limits. One test piece of this steel selected at random showed after treatment and in the small section used, a tensile strength of 216,800 lbs. per square inch, and an elastic limit of 196,000 lbs. per square inch.

The outer linings are, as stated, of planished steel formed from the flat. Some new features have recently been introduced which makes this part more clearly the equivalent of the tubular hardened and ground space. As a substitute for the projection heretofore stamped in these linings to register with holes in the bearing housing for the purpose of retaining

the former in fixed position, a small button with reduced section on one end is used, which latter is set into a recess in the lining. The two are then spot welded and the combined holding effect is such as to make it practically impossible to remove the buttons either by accident or intent.

### BUDD STEEL-BODY EXHIBIT

At the Madison Square Garden during Commercial Car week the Edward G. Budd Manufacturing Company, of Philadelphia, Pa., will exhibit a number of its all steel truck bodies. Particular attention is called to one specially designed body which is made of stamped shapes of mild open hearth steel. The floors are corrugated to give stiffness and to give small packages a better bearing. These corrugations run lengthwise so the bottom can be readily swept out. The ribs are formed of a box section giving the extreme of strength for the weight. Another body which will be shown is No. 160, a rear dumping sand body with a special hoisting device which has merit. A covered wagon which was made for C. W. Young Company, of Philadelphia, and which is a duplicate of one which carried for this company three tons of soap from their Philadelphia warehouse to a San Francisco merchant, will also be exhibited. This particular body will be elaborately painted and lettered.

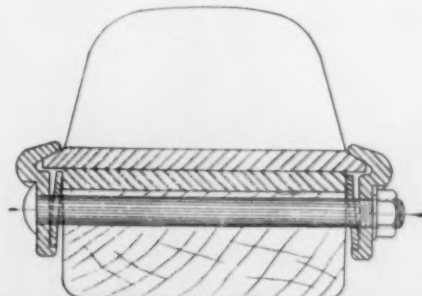
### NEW WESTON-MOTT SHAFT-DRIVE AXLE

The Western-Mott Company, of Flint, Mich., will exhibit a new shaft-drive axle designed for light commercial cars, ambulances and hearses.

This new axle is claimed to be silent, and has a great variety of gear ratios, ranging from 5 to 9 to 1. These axles are designed for purely commercial purposes, one for a 1500 lb. car with maximum overload of 25 per cent., one for a 1-ton truck, with a maximum overload of 50 per cent., on solid tires, and in addition, a lighter axle of similar construction for electric pleasure cars, where a low reduction is desired.

### A NEW UNITED STATES SOLID BLOCK TIRE

The United States Tire Company is announcing and will exhibit at the shows a new block tire for use on commercial vehicles.



End View of the United States Solid Block Tire

An unusual and distinctive feature of this tire is that it is built to meet all specifications adopted as standard by the Society of Automobile Engineers, and therefore will go on any S. A. E. wheel without fitting a special band or making any changes in the wheel.

### THE FAVARY CUSHION TIRE

One of the latest substitutes for pneumatic tires to make its appearance is the Favary Mechanical tire, which is manufactured by the Favary Tire and Cushion Company, 111 Broadway, New York, and which will be exhibited at the show.

As will be seen from the accompanying illustration, the tire is designed upon a purely mechanical principle, whereby resiliency is obtained by the flex action of a combination embodying pliable bands under tension. It is made up of bands composed of layers of extra strong belting or fabric, specially woven and waterproofed. These bands are separated by aluminum blocks attached to the bands with tubular steel

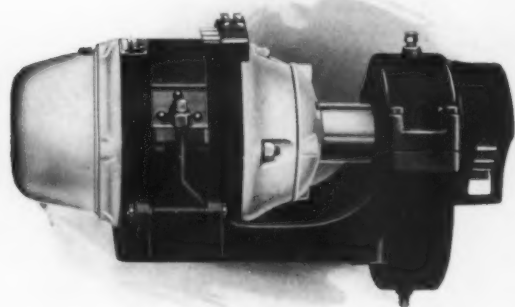


The Favary Mechanical Cushion Tire

rivets. The large heads of the rivets rest on the bands and their tubular section is opened on the aluminum blocks. There is no friction of the tire between the blocks or the fabric, they being solidly riveted together. The tread of the tire is detachable and when worn out can be replaced by anyone by means of two small levers, furnished with the tire.

### THE NORTH-EAST ELECTRIC STARTING AND LIGHTING SYSTEM FOR 1913

The accompanying illustrations show the North East Electric Lighting and Starting Outfit, as it is now manufactured by the North East Electric Company, of Rochester, N. Y. This system comprises a motor generator, starting switch, lock switch and battery. It is entirely automatic in its operation. To start the motor it is only necessary to turn on the starting switch, conveniently located at the driver's seat. The electric lights are lighted by the generator when the car is



The North-East Electric Lighting and Starting System  
Includes motor generator with automatic gear box, lock switch and starting switch

running, while a storage battery supplies current for starting the engine, and for lighting the lamps when the car is idle or running at a very slow speed. In connection with this system, the manufacturers advise the use of the North East Automatic Gear arrangement, which eliminates all clutches and automatically gives the proper gear ratios between the motor generator and the engine, both for starting and running.

### NEW VACUUM CUP TRUCK TIRE

The Pennsylvania Rubber Company, of Jeannette, Pa., is showing the improved vacuum cup tire and a new truck tire. The vacuum cup tire is now made of a composition which is warranted to resist the deteriorating influence of oil absorbed by the tires from oiled roads and streets, garage floors, etc.

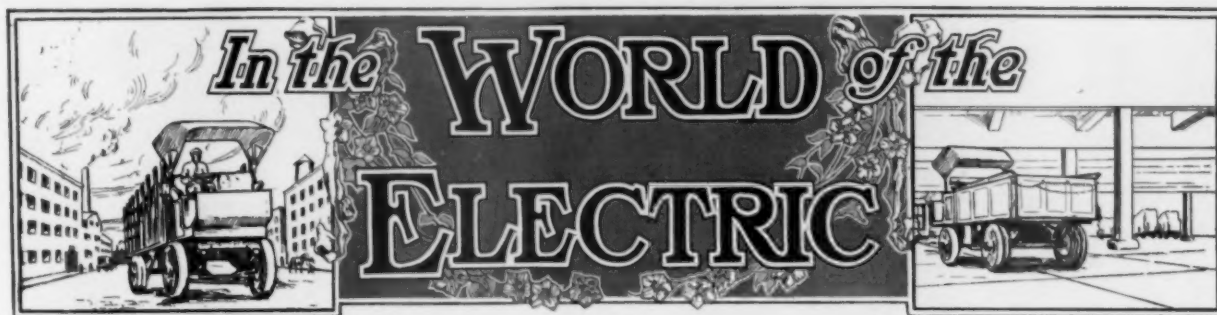
The feature of the new Pennsylvania vacuum cup truck tires is the readiness with which they can be applied to and removed from the wheel. It is a metal base tire with an unusually large proportion of pure rubber in the tread, to which are added special ingredients to give sufficient firmness and offer the maximum resistance to cutting and chipping in service. The attaching flanges are extra heavy steel with a thick protection to protect the sides of the tire from abrasion by curbs and stony roads. In the dual type, the tires are held at the center of the wheel close together, and there is no tendency to spring the flanges outward. The floating center wedge-ring enables both tires to be removed or mounted from the outside of the wheel, which need not be taken off the truck.

### THE NEW CORONET HUBODOMETER

The new Coronet hubodometer will be exhibited by the Service Recorder Company, 2344 E. 105th Street, Cleveland, O. This hubodometer is an entirely self-contained instrument, which is fitted into the end of the hub cap and has no outside connection of any kind. The fixed part is supplied by a weight, so balanced that centrifugal force cannot turn it from its normal vertical position. It records forward or backward motion, and will operate where there is no stationary part. It has no opening to admit dirt, and has nothing to be effected by road shocks or vibrations. It can be attached by simply screwing the hub cap containing it to the wheel. The Service Recorder Company will also include its Service Recorder for commercial cars.



The Coronet Hubodometer



## Heavy-Duty Detroit Electric Trucks

**D**ETROIT electric commercial cars, manufactured by the Anderson Electric Car Company, Detroit, Mich., have heretofore been featured in the so-called smaller sizes. Now, however, these cars are to be had in  $3\frac{1}{2}$ , 4 and 5-ton sizes, which are illustrated herewith. The same general features of construction which have made Detroit trucks individual are to be noticed in the larger and later models. Following describes  $3\frac{1}{2}$ -ton car:

### Edison Battery

The Edison battery is featured, equipment in the  $3\frac{1}{2}$ -ton car being 60 cells of A-10, divided into four groups, capacity of cell 375 ampere hours. The battery is underslung and, as will be noticed in illustration, is so arranged that it may easily be removed from the sides with the aid of a cradle rolling device. The unloaders are shown in position. These permit of the battery being taken out only part way for flushing and washing, or if complete removal is necessary, that is easily accomplished by means of the rolling cradle.

### Motor and Drive

The motor is the company's own make, series wound, normal volt rate 60, normal ampere rate 85, speed 1200 r. p. m., and Hess-Bright annular ball bearings. The motor is secured

to two rear cross members of the frame, attachment being through heavy lugs or arms on the motor frame. All parts are fully enclosed, but detachable cover plates permit of inspection.

First reduction is through Renold chain, completely housed, running from the motor shaft to the jack shaft, second reduction roller side chains from the jack shaft sprockets to the rear wheel sprockets. Countershaft bearings are S. K. F. annular ball, Renold chain  $2\frac{1}{2} \times \frac{3}{4}$  in., motor pinion having 17 teeth, differential sprocket 70 teeth.

### Controller

A continuous torque controller is used, size 20 T, four speeds ahead and four reverse. The safety switch is foot operated. Control handles are placed under the steering wheel, left lever for controller, right reverse.

All cables are carried in conduit, with terminals of an improved taper type, with set screw anchorage.

### Brakes, Steering and Wheels

The two countershaft brakes are  $12 \times 2$  in., the two rear hub brakes being 16 in. in diameter, 3 in. face. Both sets of brakes are foot operated; brake pulls are steel rods, adjustable.

A worm and sector steering gear is used, car steered from the left. The elements are accessible, being located forward of the axle and beneath the bottom of the dash. The drag link is fitted with ball connections, and tie rod is equipped with stout yokes.

The artillery wood wheels are 36 in. in diameter front and rear, equipped with Timken roller bearings. Tires are Firestone  $36 \times 6$  in. front and  $36 \times 4$  in. dual at the rear.

### Frame and Springs

The frame has all the appearances of having been designed for hard service. It also bears many of the earmarks of the lighter Detroit electrics.

The side rails on the  $3\frac{1}{2}$ -ton car are made of 6 in. channel steel. Length of frame is 204 in., width 39 in., with heavy cross members to brace the main frame, all joints hot riveted. Diagonal strips are used at the rear and gussets at the rear corners. Front and rear cross members are straight across from one side to the other.

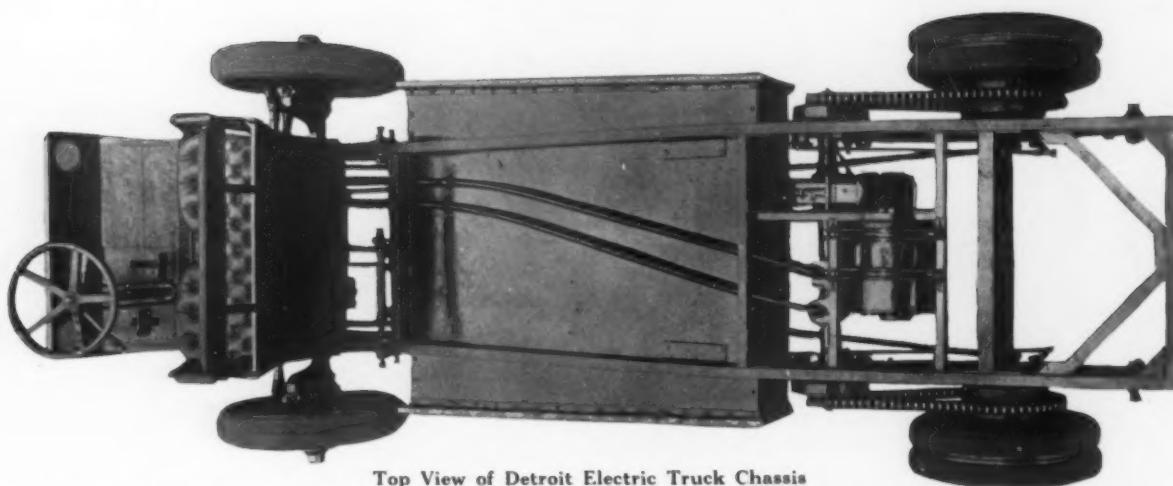
Front and rear springs are semi-elliptic, 48 in. long, 3 in. wide. Forward support of the front members is to heavy brackets, carried on the frame rails, rear support being heavy side plate shackles. The rear springs are shackled and supported in heavy brackets carried on the frame rails. Both front and rear springs are under the frame rails. Heavy adjustable radius rods take the drive.



Front View of Detroit Electric

Note the heavy, sturdy appearance of the front construction. The steering mechanism, with its staunch drag link, tie rod, yokes and knuckles, is operated through a worm and sector located, together with the steering mast and wheel, on the left side.





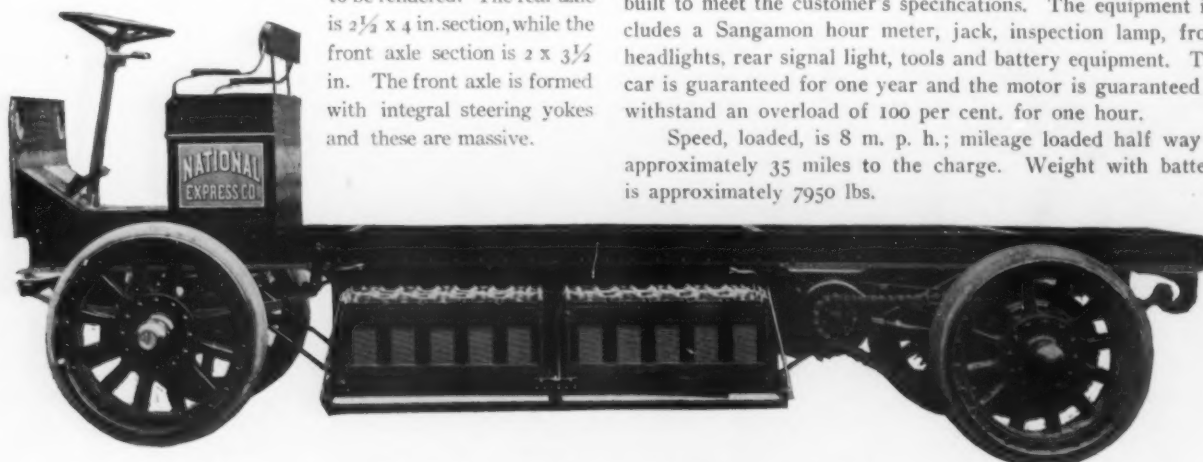
**Top View of Detroit Electric Truck Chassis**

The location of the battery box can be seen, with the wires carried in special conduits. The motor is suspended by special brackets attached to cross members, these in turn attached to the main frame, back of the jack shaft. Diagonal pieces and gusset plates are used at the rear to stiffen the frame.

### Axles, Etc.

The axles are steel forgings consistent with the service

to be rendered. The rear axle is  $2\frac{1}{2} \times 4$  in. section, while the front axle section is  $2 \times 3\frac{1}{2}$  in. The front axle is formed with integral steering yokes and these are massive.



**Detroit Electric Three and a Half Ton Chassis**

The battery cradle is located amidships, suspended from the main frame members and has a cradle rolling device, which permits of removing the cells for inspection purposes. Note the sturdy construction of the front spring shackle and rear spring bracket.

### BOSTON ELECTRIC MEN GET TOGETHER

A meeting which shows the proper spirit recently held in Boston, was that of the Electric Motor Car Club of that city. This organization is composed of the dealers in electric pleasure and commercial cars and accessories. Many of these men are very keen competitors. The meeting took the form of a Christmas tree gathering, the center table supporting a large, beautifully decorated tree, needless to say, electrically illuminated. The meeting was a very merry one and joke presents as follows were presented the various men prominent in the organization: Frank J. Stone, manager of the local branch of Electric Storage Battery Company, was presented with a handsome autograph photo of Thomas A. Edison. A very able and extemporaneous answer followed by Mr. Stone. Vice-president E. S. Mansfield then, in a humorous vein, presented President Baker with a toy gavel with suitable verses. Secretary H. F. Thomson was then presented with a pen also

accompanied by proper verses. General Superintendent W. H. Atkins, of the Edison Electric Illuminating Company, who was one of the founders of advertising campaigns, was presented with an imitation bottle of champagne; W. H. Moses, director of the recent Electric Show at Mechanics Building, was given a miniature water wagon; W. H. Francis, a prime mover in the Club, received a toy horse and wagon, and a toy garage was given to Manager Albert Weatherbee, of the local Detroit Electric Branch, who has been agitating the establishing of downtown parking spaces in electric garages. Philip E. Whitney, of the Bailey Electric Company, was presented a toy football; J. W. Bowman, of the Waverley Electric; D. E. Tiffany, of the Rauch & Lang; G. W. Holden, of the Edison Battery, and others prominent in the club, paid the price of their gifts in the humorous verses which accompanied them. Useful souvenirs were presented to all at the close of one of the best "get-together" meetings yet held in Boston.

# Electric Design for Electric Vehicles

BY W. H. CONANT

Member Society Automobile Engineers

(Continued from December Issue)

## Batteries

The selection and arrangement of a battery is a close second in importance to that of motor and is considered by some to rank first.

Battery voltage determines that of the motor to be used and is itself determined by the number of cells. Average discharge voltage per cell in a lead battery is approximately 1.9 and in an alkaline battery 1.2. Common practice multiplies the number of cells selected of either battery by one, to get a proper motor voltage for the alkaline type and by 1.8, 1.9 or even 2 for lead. The advocates for and against the use of as many cells as possible in vehicles are, perhaps, evenly divided. Experience would seem to teach that high voltage batteries are better from every viewpoint except cost and space. For a given number of watt-hours, the battery having fewest cells and highest capacity is the cheapest to build and renew. If properly arranged, it also requires somewhat less space. Except for the negligible matter of grounds between trays, these, however, are the only advantages. Higher voltages mean more economical charging, better motor efficiency and weight and improved battery, motor and vehicle operation on grades and starts.

As against "common practice" mentioned above, is the trend of certain leading manufacturers today. It has become evident to engineers, working independently, that the use of battery voltages considerably higher than those which correspond with motor ratings, produce higher vehicle efficiency. A motor designed and sold for 60 volts will usually show a slightly better efficiency, in itself, even, if operated at 70 or as high as 80 volts and, for a given load of vehicle, will produce a higher speed with only a negligible increase in current. The gratifying results of this arrangement are:—

1. More speed for nearly the same ampere-hour output of battery.
2. Better motor efficiency at low battery voltages as well as high.
3. Greater mileage per charge with less increase of battery weight than by use of larger cells.
4. Better battery voltage for charging purposes.
5. Less effect from 2 or 3 "cut-out" or defective cells.

The best results shown in the last year or two have been from this general relation of battery to motor voltage, though but little mention is made of the fact in descriptive literature.

## Charging

The question of charging efficiency is more important than might seem at first thought. The most common voltage of direct current lighting and power circuits is 110. To charge less than 42 or 44 lead cells, or 60 alkaline cells, means a loss of current in rheostats which increases as the number of cells decreases. This makes the vehicle owner pay for many more watt-hours than he gets the benefit of, which is not, of course, a desirable condition. With a 30 cell lead battery, for example, charging on 110 volts, one-third of the

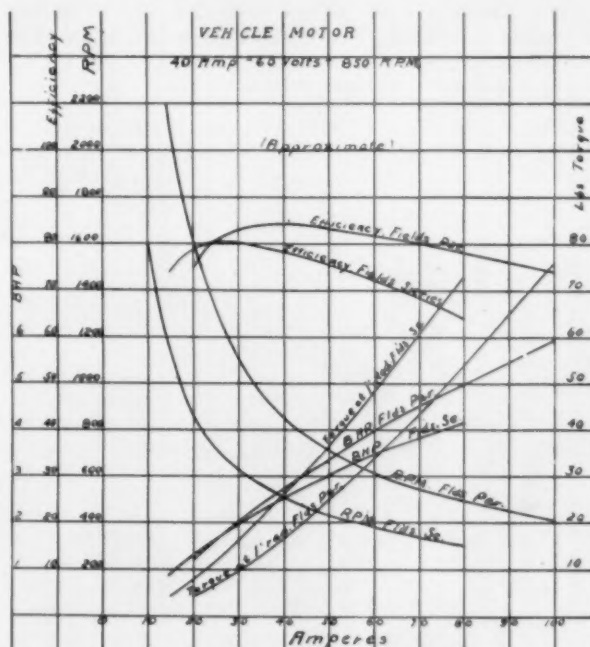
current paid for by the user is wasted. If motor generators are used, it means having odd-voltage dynamos which are special with the manufacturer and, besides being expensive, are of use for no other purposes. With mercury-arc rectifiers and alternating current, these objections do not hold, but for other reasons this charging arrangement should only be used where other forms are not convenient or economical.

Many "110-volt" lines really give 112 to 120, but unless the average is between these limits, it is not possible to figure on more than 42 cells since several battery makers call for a maximum cell voltage on charge of 2.6.

In years gone by, the capacities of all lead cells for vehicle work were based on the four-hour rate of discharge. Thus a 140 ampere-hour cell was guaranteed to deliver 35 amperes for four hours. Today, with the introduction of thinner plates, many makes are sold on the five, five and a half and even six hour rate, so that 35 and even 37 or 38 amperes are guaranteed for five hours, or more, in the same cubical space as for four hours.

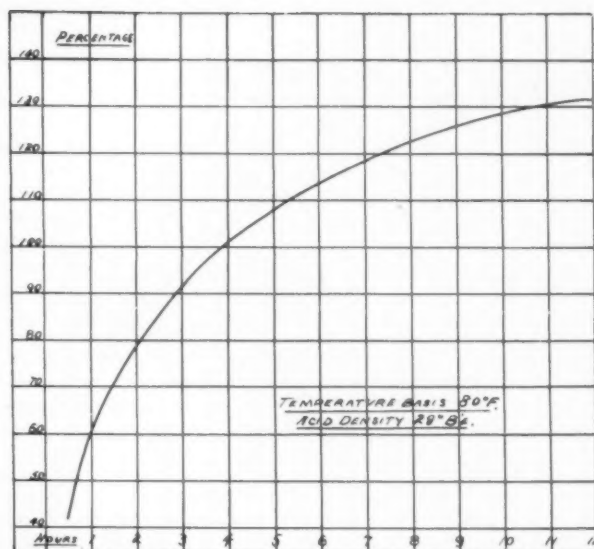
## Battery Plates

There is a very general belief that the original "thick," or standard, battery plate will give longer life than the thinner plates now being used so widely. Claims are made that the thicker layer of paste, or active material, will take a longer time to slough away from the supporting grid and thus last longer in service. While this may be true, it is largely a fallacious half-truth. Here are the real conditions put very briefly.



Characteristic Performance Curves

For explanation of above, see text of this article in December issue



Curve Showing the Capacity at Various Rates of Discharge

Storage battery capacity is dependent, among other things, upon the surface of active material presented to the electrolyte. Conversely, the rapidity with which such material wears away is dependent upon the density of current drawn from it. Considering the 35-ampere-4-hour cell composed of 11 thick plates, there is a draw of 7 amperes per positive plate. If, as is now done, 15 thin plates be put into the same size jar, the draw per positive plate is only 5 amperes. Therefore, if there is more material to slough away in the thicker plates, there is, on the other hand, but 5-7 of the sloughing effect with the thin ones. But there is a still more important consideration. The active material lying between the two plate surfaces is not of the same value as the surfaces themselves both from mechanical and electrical reasons. Once the surfaces disintegrate, the bulk of material behind them falls away more quickly and gives, besides, poorer efficiency. For this reason, the excess of material in thick plates over thin ones is really of little or no value.

Another advantage of thin plates is the less amount of heating due to high discharge rates on hills or over poor roads, which are handled better by improved acid diffusion and the larger percentage of conducting grid to active material. If vehicles operated continuously at full speed without grades or stops, this advantage would not be important, but as one of the principal functions of the electric is its easy and frequent starting ability, it is evident that the high currents necessary for this purpose are handled better by many thin plates than by few thick ones.

The normal running current of the vehicle must not exceed the normal discharge rate of the cell selected. There is no rule evolved from experience in designing electric vehicles more clearly defined than this. To understand the reason for it necessitates some knowledge of storage batteries and within the limits of this article it is only possible to point out that the total capacity of any battery is inversely proportioned to the rate of discharge.

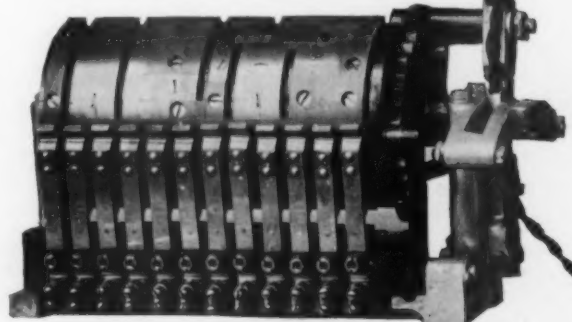
With this in mind it might seem that it would be advisable to put in a battery having a very much higher rate

than the normal draw of the vehicle. Weight and space must be here considered. To get best efficiency from vehicles, weights of cars empty must not be out of proportion to those of loads to be carried. If alkaline batteries are used, considerable excess capacity can be provided because of their lighter weight.

### Controllers

Controllers were, at first, little more than rheostats similar to starting boxes for stationary motors. Because of considerable current losses in the resistance, later designs provided for commutating the battery. This was sometimes connected in as many as four separate units. The first speed was obtained by putting four sections in multiple so as to quarter the voltage and quadruple the current capacity for starting torque. Second speed came from connecting each pair of units into series and the two pairs in multiple to get half voltage and double current. Third, and sometimes highest, speed found the whole battery in series.

Motor inefficiency at quarter voltage very shortly prompted the abandonment of this plan and resistance was used again for first speed, which is practically universal today. To obtain a fourth speed, the field windings were divided into two pairs, connected in series-multiple for the first three speeds and all in multiple for the fourth. Previous to the last three years, the most common form was a combination of these designs; first speed had two halves of the battery in multiple and the fields in series; second speed, battery the same and



Controller of the Continuous-Torque Type

fields in parallel; third, battery and fields both in series and fourth, battery the same and fields in parallel.

Between each of the speeds, or steps, the circuit was opened to set up the new combination of connections. Not only did this interrupt the "pull" of motor through transmission with consequent loss of effort and reversal of strains, but it caused constant arcing at the point of break that resulted in rapid wear of controller parts and loss of vehicle efficiency. To overcome this condition, "continuous torque" controllers were designed and are now universally used. No interruption of current flow between battery and motor is permitted, with the result that life and efficiency of all vehicle parts are greatly increased. One form of continuous torque controller is shown.

(To be concluded in the February Issue)



## Trucks Prove Economical in Coal Delivery

BY E. S. FOLJAMBE

(Continued from December Issue)

Another Boston company using motor trucks is the Staples Coal Company, its first truck being put in service in July of last year. Two more machines are now in service. One of these is a Peerless; the first job upon which it was used was hauling the winter's coal supply from the Albany Street Wharf of the company to the Boston State House, a distance of about a mile, practically all up hill, and the last part of the climb up an exceedingly stiff grade. This vehicle averaged 80 tons a working day on this job, thus doing the work of more than 8 horses.

### Dumping Bodies

The fact that trucks must be kept moving is now so well understood that great advances have been made during the past year in forms of dumping bodies. In the coal business it was very soon found that a body which dumped only to the rear was at a great disadvantage in many places. Side dumping bodies were then developed, and finally, bodies which not only elevated, but could be swung around to any angle and dumped in any direction. Many of the bodies have to be hand cranked, but others are provided with a power hoist, several of these various types being shown in the accompanying page illustrations. Some are operated by compressed air, others are hydraulic, the fluid used, however, being oil operated by a piston in a closed cylinder. Others are raised on shears, others by chains which are wound upon drums, but by far the most common hoist is a screw working in a threaded sleeve or a nut on the forward end of the body. The chief objection to this method is the height to which the screw sticks up. This has been overcome in some of the designs, notably that of the Peerless, which is provided with a telescoping screw which does not project objectionably above the body when in closed position. Many of these can be operated by the driver without

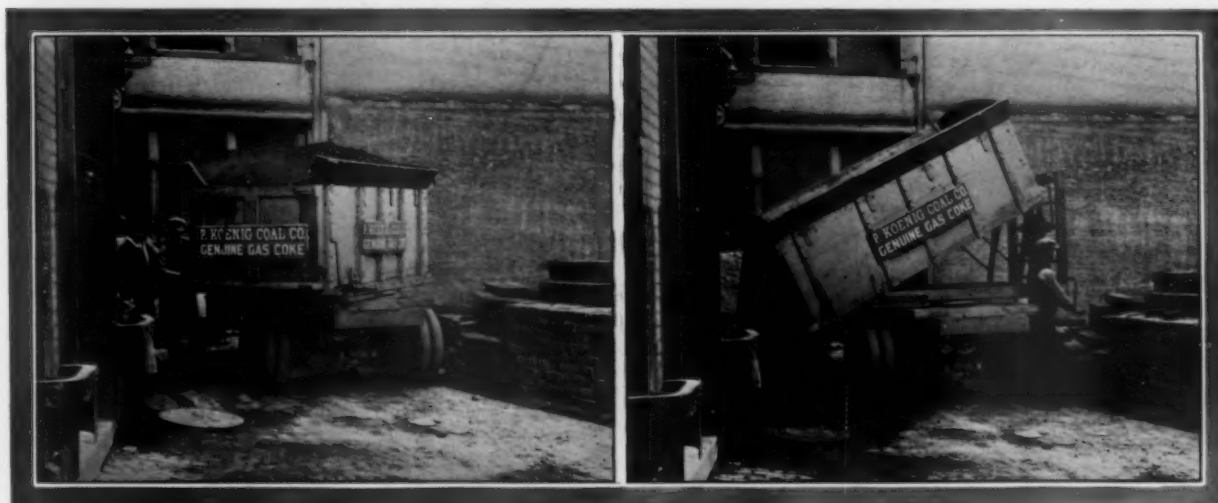
leaving his seat, which is a decided advantage when dumping sand, building material, etc., but not so much in the delivery of coal, as it is almost always necessary to open windows or remove coal hole covers before discharging the load.

The swiveling bodies are extremely handy in close quarters. In the accompanying illustrations are shown two views of a Packard 3-ton truck in use by the P. Koenig Coal Company. It is shown delivering a load of coal in an alley less than 15 ft. in width. It requires about one minute to swing the body into the desired position, and about two minutes to elevate and dump same, the body raising to an angle of about 45 deg. The body length is 9 ft., width 4 ft. 6 in., and height 2 ft. 6 in.

### A Novel Body

A novel body has been put out by Longest Brothers Company, of Louisville, Ky. It is of the side dumping variety, and provides a separate compartment for each ton of coal, so that different kinds of coal can be carried at the same time. These compartments can be separately dumped, either to the right or to the left. As the bins or compartments are tipped downward by hand cranking, a worm wheel mechanism on the side opens outward, forming a slide which shoots the coal away from the wheels. If desired, extra compartments can be used, the empties lifted bodily from the truck, and loaded ones placed in position when the truck arrives at the yards. This again causes a great saving in time. In connection with this system, the quick loading chute which is attached to the side of a freight car can be employed. This is filled by the man in the car, and when the truck drives alongside, the contents can be dumped at one operation into the truck, so that the vehicle is not kept standing. One of these separate compartment, side dumping vehicles is shown in the group picture.

The Seaconnet Coal Company, of Providence, R. I., is using a 5-ton Alco, which is illustrated in the accompanying



**Packard Three-Ton Truck Fitted With Swiveling Body**

Two views of the swiveling-body truck used by the P. Koenig Coal Company. It requires about one minute to swing the body into position, and about two minutes to dump the same



Kapp Five-Ton Truck Dumping Load by Means of a Power-Driven Screw-Hoist



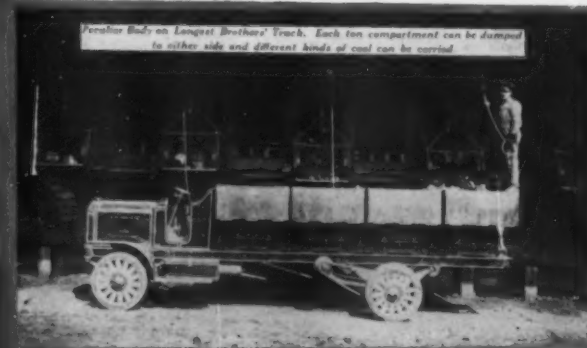
Also in Use by Seaconnet Coal Company, Providence, R. I. Six and a half Tons Capacity. A saving of twenty cents a ton is claimed for this truck.



Leath-Jurgens Hand-Dumping Body. Chains pull the foot of the body up the inclined tracks



Three and a half Ton Also Being Loaded From Chute. Note the sides which prevent fine coal and dust from entering the body



Perdue Body on Longest Brothers' Truck. Each ton compartment can be dumped to either side and different kinds of coal can be carried



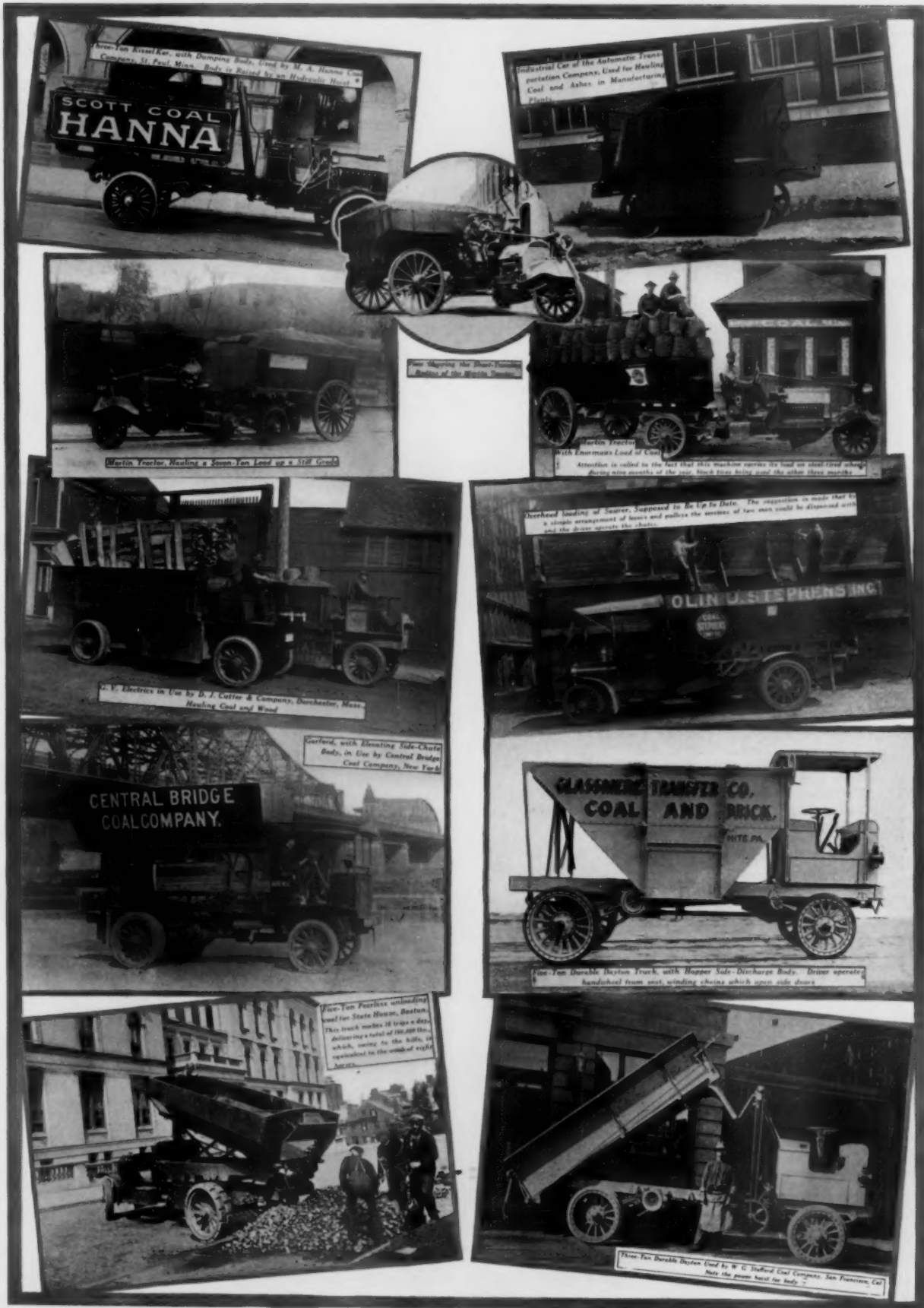
One of the C. F. Electric Trucks Used by the Hudson & Manhattan Railroad Company at N. Y. Hopper-shaped body discharges load by gravity without dumping



Truck Being Loaded From Overhead Hopper



Five-Ton G. V. Electric in Use Three Years by New England Coal and Coke Company, Boston. Radius, thirty-two miles





page cut. After one year of service the statement is made that the truck has saved on an average 20 cents per ton over horses. Unfortunately, we do not know the exact amount of work the machine has done, but as such a truck is capable of handling at least 18 tons per day, 296 days in the year, it should move at least 5328 tons, which means a saving per year of over \$1000.

### Record of a Three and a Half Ton Truck for 287 Days

The Godfrey Coal Company, of Milton, Mass., also uses an Alco of 3½ tons capacity, which has entirely displaced four horses, which would cost at least \$12 a day to operate. The record of this machine for 287 days is as follows: The total number of miles covered was 9354, and the coal delivered, 4603 tons.

Labor, chauffeur and one man .....	\$1505.75
Gasoline .....	371.32
Oil .....	80.65
Tires .....	799.90
Repairs .....	630.31
Insurance .....	180.00
Registration .....	5.00
Depreciation, 25% for one year .....	1000.00
Interest on investment at 5% .....	200.00
<b>Total .....</b>	<b>\$4772.93</b>

### An Unusual Record

The following very complete record is that of a G. V. electric of 5 tons capacity in the service of a coal dealer in a large city, where deliveries were made to hotels and manufacturing establishments. This record is unusually complete, and is known to be accurate, but we are not at liberty to give the name of the company using the vehicle.

### Record of Electric for One Month

Capacity of truck .....	5 tons
Class of roads .....	Asphalt & Granite Block
Grades .....	6% of distance on grades from 1 to 10%
Size of coal delivered .....	Buckwheat for Furnace
Days in service .....	26
Hours in service .....	218
Hours per day in service .....	8.45
Tons delivered per month .....	963
Tons delivered per day .....	37
Miles per month .....	717
Miles per day (average) .....	27.6
Tons per hour .....	4.4
Loads delivered .....	192
Average round trip, miles .....	3.75
Operating cost, which includes garage and electric current at \$65.00 per month, parts and appliances but does not include driver \$69.55	
Per mile .....	0.097
Figuring the cost of operating with all charges, including Depreciation, Interest, Insurance, Driver, Tire, Battery, and mechanical repairs, electric current, garage, care and lubricants, at a maximum daily cost of .....	\$12.00
Cost for each ton delivered .....	0.324
Cost per ton mile, returning empty .....	0.067

These figures were taken from the April books of the company, after the trucks had done a hard winter's work. The truck in question was only out of service in the seven months 31.7 hours, this being on account of tire replacements, and this period covered one of the hardest and most severe winters for many years. From the middle of December to the middle of February, the worst period as regards snow, the truck only lost one day, and that was for a tire replacement. The minimum mileage per day was 26, and the maximum for the 48 days was 39 miles per day.

### 3240 Tons Hauled in One Month by One Truck

What is probably one of the most remarkable coal hauling performances is that of a 5-ton G. V. truck in use by a mill corporation in hauling coal from the railroad to the mill. This record is especially interesting in view of the fact that 3240 tons were delivered in one month.

Capacity of truck .....	5-tons
Class of roads .....	Dirt and a little macadam
Grades .....	4-5-6%
Coal—size .....	run-of-mine
Working day during period .....	27
Days in service during period .....	27
Hours in service .....	270
Hours per day in service .....	10
Tons delivered per month .....	3240
Tons delivered per day (average) .....	120
Time for loading, minutes .....	8½
Maximum tons delivered per day .....	135
Miles per month .....	1077.8
Miles per day (average) .....	28.8
Loads delivered per day (average) .....	24
Average round trip .....	1.2
Operating cost per day including Depreciation, Interest, Insurance, Driver, Tire, Battery, and mechanical repairs, electric current, garage, care and lubricants, but does not include helper, at maximum daily cost of .....	\$12.00
Cost per ton mile, returning empty .....	0.0833
Cost per mile .....	.416
Average time of loading .....	8½
Average time of unloading .....	2
Average time weighing load .....	2

Since above record was made the loading time has been reduced to 3½ minutes.

In the accompanying illustration is shown a C. T. electric truck used by the Hudson and Manhattan Railroad Company. This truck is of 7 tons capacity, 4-wheel driven. It averaged 70 tons of coal per day, and during last winter it delivered 56 tons of coal in the same time that four 3-horse teams required to deliver 44 tons. The difference in the cost of hauling was 70 cents per ton, or \$30 a day saved by the use of the electric truck.



One of the Fleet of 23 Hewitt Ten-Ton Motor Trucks in the Service of Burns Bros., N. Y.; showing what is said to be the most modern time-saving method of loading. A ten-ton truck is loaded in a little less than seven minutes. Here again the services of two men could be dispensed with if chute operating lever, which could be controlled by the driver, were provided.



**Loading By Means of a Scoop**

From figures taken from experiences with Knickerbocker gas trucks, it is fair to assume that it costs about \$13.40 per day for a 5-ton gas truck. This includes interest, depreciation, gasoline, oil, tire repairs, storage, insurance, and driver. Such a truck can average under proper conditions 12 loads, or 60 tons of coal per day, or at an average cost of 22 1-3 cents per ton. A 3-horse hitch in New York City can deliver an average of 25 tons daily at a cost of 31 cents per ton. Such a hitch costs \$7.75 per day. This is a saving of about 8 2-3 cents per ton, or \$5.20 per day per truck. During snow and winter weather, the efficiency of the truck as compared to the horse goes up. The machine can be used overtime to take care of emergencies, and the radius of business can be increased.

Another progressive coal company whose name we are not at liberty to give is using 5-ton White dumping trucks. Even on short hauls these machines show great economy over horses, as the following record proves. On one particular day one of these 5-ton trucks was employed in delivering coal to a business building about a mile from the yards, making a round trip haul of 2 miles. Close to the yards there is a very stiff hill, which has to be taken on the low gear. The working day was 10 hours, and the number of round trips made were 15, 40 minutes being consumed counting the time of loading and unloading; 20 minutes of this time was actual running, while approximately 20 minutes was the time of loading and unloading. The loads were placed on the truck from a scoop loading device, requiring from 4 to 10 minutes, while unloading was done by the dumping body. Twenty minutes running time is at the rate of only 6 miles per hour, this being due to the hill, and operating through congested traffic. The loads carried averaged 11,240 lbs., so that the 15 trips aggregated approximately 84 tons.

Let us compare this performance with horses on the same job on the same day. One of the teams which was an aver-

age one, made 8 trips during a 10-hour day. The body was of the modern dumping type, and carried an average load of 7300 lbs., making a total tonnage of 29. On the stiff grade mentioned it is necessary to assist by means of extra teams all the horse drawn wagons. An estimate shows that these extra teams increase the cost per ton at least 2 1/2 cents. The truck, therefore, did practically the work of three teams, to say nothing of the extra teams used on the hill, and this was on a short haul under what might be considered adverse conditions for the truck owing to the speed being cut down by having to pass through very congested traffic.

### "IF"

(With apologies to Rudyard Kipling.)

If you can sell your trucks when all about you  
Are giving theirs away and blaming it on you;  
If you can sell your trucks when all men doubt you  
And selling them o'ercome their doubting too;  
If you can talk and not give out false impressions,  
Or hearing rumors don't deal in ugly news;  
Or being scared don't give way to consternation,  
And yet don't try to bluff your sale with ruse.

If you can work and never lose your temper;  
If you can sell and then go back again;  
If you can lose and never let a whimper  
Relieve your heart from disappointment's pain;  
If you can tell the truth and still retain your patron  
Whose trade may mean your very job,  
Or if he's easy not try to make a showing  
By putting over something which will rob.

If you can make a study of truck transportation  
And use it when you want a man to buy,  
And have the nerve in all your conversation,  
To tell him what will do his work and why;  
If you can force your customer's attention,  
Away from thoughts of money and the cost  
And show him how to use this truck invention,  
To make the profits which before were lost.

If you can walk into a corporation's office,  
And bring away an order with a check;  
But getting it don't make a lot of statements  
Which mean trouble in the future by the peck;  
If you can make these sales a regular custom  
And making them, not want always to be praised,  
Yours is the earth and all that's in her bosom  
And—what is more—you'll get your salary raised.





## The Commercial Car in Vienna

**O**F ALL the big cities in the world Vienna is perhaps the one in which the system of what may be called municipal socialism has been developed to its highest pitch. Not only are the supplies of gas and electricity the monopoly of the municipality, but the latter also run hundreds of kilometres of municipal tram lines besides controlling all the existing 'bus lines, and though in some fields development has been slower than in others, remarkable

In fact, in the Viennese fire-brigade service animal traction has been entirely eliminated, and the motors owned by the fire brigade number over fifty. The majority of these



**First-Aid Wagon for the Municipal Tramways of Vienna, Carrying Men and Repair Outfit**

progress has been made in the use of motors. Perhaps with the exception of Hamburg, Vienna stands ahead of all other European cities in its use of automobile fire-fighting plant.



**A 16-18 h.p. Viennese Tramway Wagon by Bock & Hollender**

vehicles are Austrian-Daimlers with electric motors built into the front wheels, and the first of these was put on the road as far back as 1903.

For the tram service, too, the automobile has been found useful. In the case of a tram-car break-down a telephone message is immediately sent to the next station, and within a few minutes the tool wagon arrives on the spot, carrying



**The Type of Four-Wheeled Electric-Driven 'Bus for Use With Trailer in the Viennese Suburbs**  
Note the sanding apparatus for affording grip to the back wheels





**STUDY** the illustrations!

They show how you can double the efficiency and profit of your heavy service truck.

The upper cut shows the "traction" wave always formed in the ordinary continuous tire under heavy load. This wave, caused by the bulging of the rubber, works into the base and tears the tire from its fastenings. It can't be avoided in any ordinary way. Then, too, this wave forms a constant hill—the tire is always climbing, retarding progress, reducing power efficiency.

Contrast this condition with the profit-making worth of—



Showing traction wave in ordinary continuous tire. (A) indicates where wave forms. (B) indicates base where roll and tread separation occur.

# Firestone

**Continuous Base—Notched Tread**

## Truck Tires

The lower cut shows how the Firestone Notched Tread overcomes the wave, by preventing its formation. This is *not* an individual block tire, with tread-tearing, metal-retaining plates. The Firestone continuous base is of the same tough, resilient compound as the tread. These tires hold the road, increase traction, absorb all vibration.

Get the full facts. They mean Economy and Increased Profits.

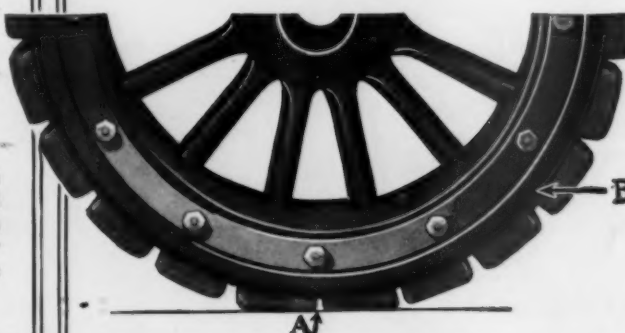
**Firestone Truck Tires for Every Type of Car, Every Load, Every Road Condition**

The Firestone Line of Truck Tires has in it the tire, solid or pneumatic, you need for your particular service. Get the books which tell the story. Ask, as well, for Quick Removable Rim facts. They are valuable.

**The Firestone Tire & Rubber Co.**

"America's Largest Exclusive Tire and Rim Makers"

**Akron, Ohio—Service Stations Everywhere**



Showing how Firestone Notched Tires overcome destructive traction wave. (A) indicates wave passing off into space between blocks. (B) indicates continuous base—assuring absorption of vibration in every direction.

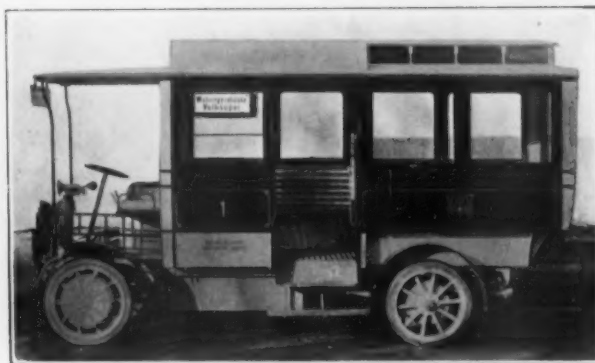
with it a small four-wheeled bogie carriage for use in case of a broken axle. Another example of the commercial car as used for tramway work is the ladder wagon shown in the illustration, for dealing with the tramway overhead equipment, while another type is the power wagon also illustrated.

The city of Vienna is also running a number of 'bus lines. Some of these for suburban work are petrol driven, but the main lines are operated with electric vehicles of the light 'bus type working on the Daimler-Tudor system.

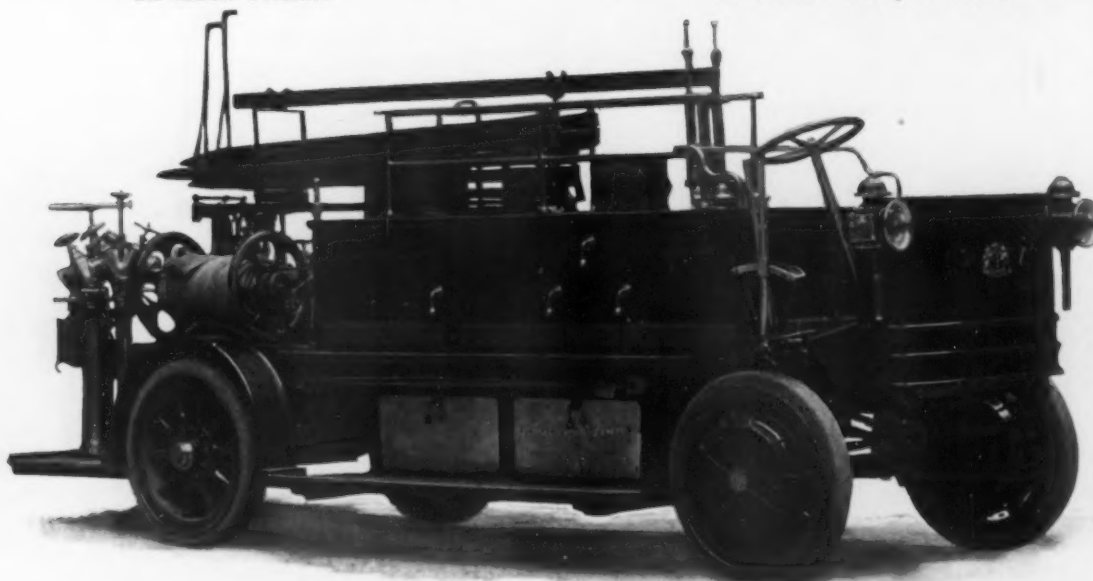


Ladder Wagon of the Viennese Tramway With the Ladder Detached

The First-Aid Bogie Brought by Automobile



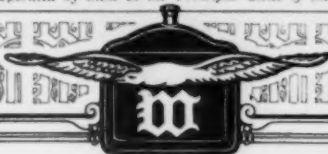
An Electric 'Bus Built on the Daimler-Tudor System, for Use in the City of Vienna



An Austrian-Daimler Electric Front-Driven Carbonic Acid Gas Fire-Engine Belonging to the Vienna Fire Brigade



*One of the Squadron of Twenty-Four White Motor Trucks Owned by Armour and Company, Chicago, and Operated by them in the Principal Cities of the United States*



## WHITE MOTOR TRUCKS

The predominant use of White Motor Trucks by the foremost mercantile and manufacturing firms, not only in the United States, but throughout the world, is the most convincing proof of their superior merit in practically every line of service.

### A Few Well-Known Owners of White Squadrons

American Can Company	Joseph Horne Company
American Chic Company	Hudson's Bay Company
American Steel and Wire Company	Illinois Steel Company
Armour and Company	McCreery and Company
Berghoff Brewing Association	National Cash Register Company
Booth Fisheries Company	Pabst Brewing Company
Brazilian Government	Philippine Islands Government
Coca-Cola Company	Postum Cereal Company, Ltd.
Cudahy Packing Company	Remington Typewriter Company
Diamond Rubber Company	Russian Government
T. Eaton and Company, Ltd.	W. and J. Sloane
Marshall Field and Company	Standard Oil Company
Gimbel Brothers	United Cigar Stores Company
B. F. Goodrich Company	United States Government
Gulf Refining Company	Winchester Repeating Arms Company

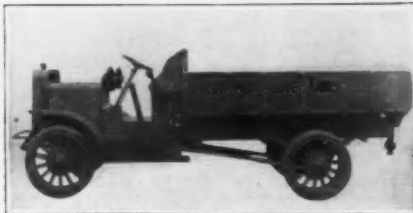
White Motor Trucks are built in capacities of 3-4, 1 1-2, 3 and 5 tons, and all models are uniform throughout in parts and design, thus making them the most practical for the standardization of delivery or transportation service. Literature and detailed information furnished on request.

*Gasoline Motor Cars, Trucks and Taxicabs*

**The White  Company**  
Cleveland



# MAIS



## The 100% Efficiency Truck

To thoroughly appreciate the superiority of the MAIS you do not need more proof than the practical demonstrations being given day after day, year in and year out—

### Just see the MAIS making good

Prospective buyers and dealers—write us for list of MAIS owners. Go to the nearest owner and let him tell you about the MAIS. Ask him for the real facts. He knows.

Every truck manufacturer makes all kinds of claims for his truck. He is trying to sell his product just the same as you try to sell yours. Don't buy a truck or contract as a dealer, for a truck, that is sold on the reputation of a pleasure car. You are up against an entirely different proposition. You (buyer or dealer) have a transportation problem to solve and you must do it at the lowest cost per ton mile—otherwise your truck investment is not a sound one.

Remember the MAIS is internal gear driven. This means no loss of power in transmission.

Dealers—write at once for territory still open—the MAIS is backed by a \$1,000,000 corporation.

**MAIS MOTOR TRUCK COMPANY**  
Indianapolis, Ind.

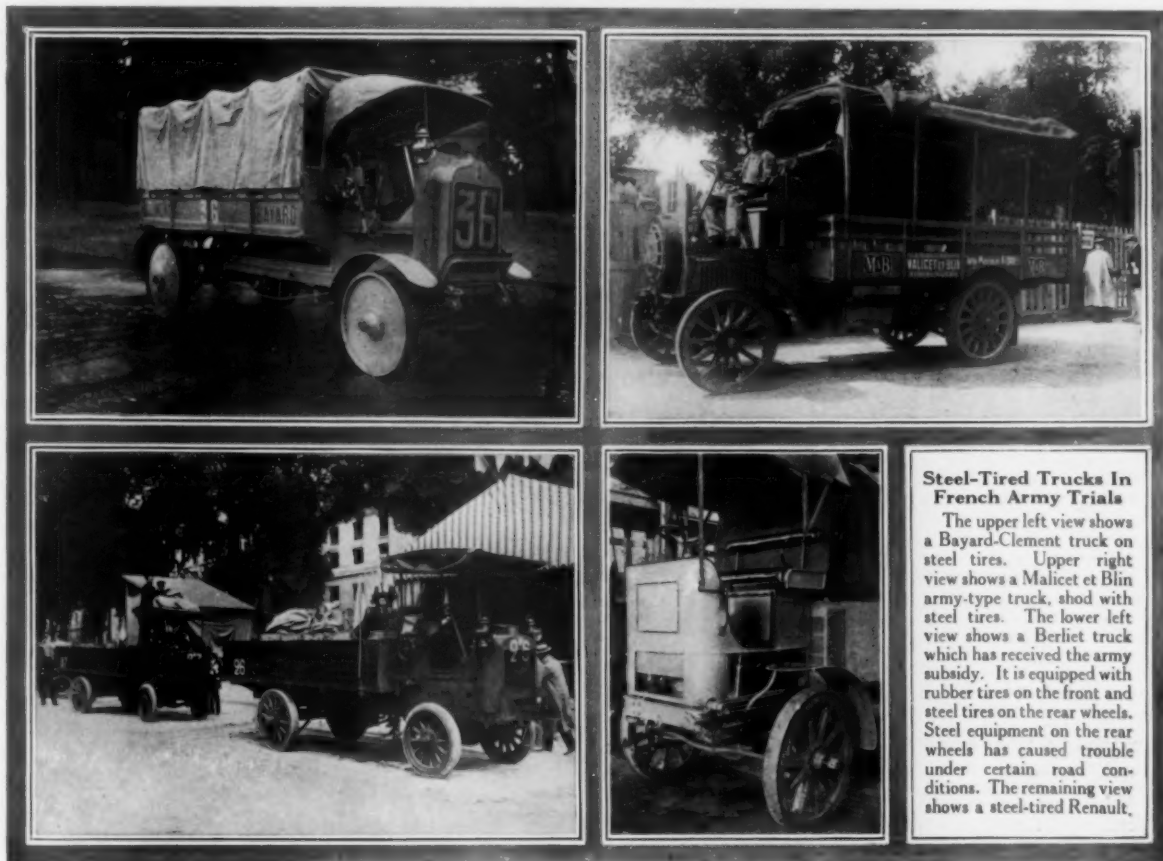
When Writing, Please Say—"Saw Your Ad. in the C C J"

### THE STEEL TIRE ABROAD

**A**S there appears to be a rumor that the French Army authorities, as a result of the military trials of last year, have specified steel tires on all trucks which they are subsidizing, it may be stated that this rumor is incorrect. No doubt it arose from the remarkable successes in actual running of the cars shod with steel tires, but it must not be forgotten that at the end of the trials all vehicles have to undergo a rigid mechanical examination. Steel tired vehicles which run well often fail in this examination. Steel tires are admitted to have one advantage, for an estimate is made for the wear and tear on tires of whatever sort, and on such an

short of 16,000 sq. yds. an hour, while at high pressure working nearly 21,000 sq. yds. can be covered in an hour. Roughly speaking, on a 10-hour day the machine can treat 30 miles of road.

Working under similar conditions, a motor street sweeping machine can do the work of four horse-drawn machines, dealing as it can with 9,166 sq. yds. an hour, and this at an inclusive cost of just over 13 cents. From the figures given in the report of the Engineers of the "Ponts et Chaussees," it appears that motor watering trucks show a saving of 15 per cent., motor sweeping machines 20 per cent. economy over horse labor in Paris, while in the broad and comparatively unencumbered streets of Versailles, 50 and 60 per cent.



#### Steel-Tired Trucks In French Army Trials

The upper left view shows a Bayard-Clement truck on steel tires. Upper right view shows a Malicet et Blin army-type truck, shod with steel tires. The lower left view shows a Berliet truck which has received the army subsidy. It is equipped with rubber tires on the front and steel tires on the rear wheels. Steel equipment on the rear wheels has caused trouble under certain road conditions. The remaining view shows a steel-tired Renault.

estimate steel naturally comes out on top, but when the wear and tear of the car itself is taken into consideration, the results are by no means what the running of 1,000 or 1,500 miles may superficially show. As a matter of fact, only a very small number of steel tired trucks have been subsidized, probably one-tenth of the whole, comprising chiefly Aries, Berliet, Renault and Schneider trucks.

The French Military Authorities have officially announced their intention of holding trials of commercial cars, under their subvention scheme, early in July.

Since writing the article in *THE COMMERCIAL CAR JOURNAL* on the use of municipal motors in certain cities of Europe, some instructive figures are to hand from the municipality of Versailles, which show that a patrol motor truck can do the work of three horse-drawn vehicles of this type, the actual area, that the motor machine can water, averaging only just

### SOME NOTES ON THE PARIS CAB SERVICE

As the motor cabs in Paris do not pay direct taxation, accurate statistics are not kept, and so the number is not known to perfect exactness, but it may be placed fairly definitely at about 6600 in service at present. 1837 of these are said to be privately owned, and a number are owned by co-operative societies and small groups of owner-drivers. The high cost of fuel in Paris stands in the way of the extensive adoption of the four-cylinder cab, and though every type is to be found on the streets, two-cylinder Renaults predominate. Until recently the drivers invariably used benzol; they refused to run the cabs on gasoline, and as they bought their own fuel from retail stores, owners had to submit. The recently imposed city tax on benzol has, however, removed much of its comparative advantage, but this fuel is still employed in the majority of cases.

## SOME NOTES ON DEPRECIATION AND MAINTENANCE



NOW that depreciation is arousing so much interest on the American side an article on how it is dealt with in Europe is not inopportune. Over here it is treated in several different ways. In 1905 and 1906 prospectuses of the many motor omnibus companies, that were then floated, gave exceedingly variable estimates, for in those days there were no actual data to guide the engineer, and these estimates varied from 10 to 35 per cent. Also, generally speaking, depreciation was included under one heading with maintenance.

While theoretically the life of a machine may be prolonged indefinitely there is a very distinct limit beyond which it will not pay to prolong it, and this point is reached when breakdowns and repairs become so frequent that the earnings do not warrant the cost of maintenance, all things considered; in other words, depreciation should be so adjusted that by the time what may be called the paying life of the car has ended, its cost will have been written off by depreciation.

But how to estimate life? The general custom in Europe is to assign a vehicle so many years, and all too frequently the conditions of working are disregarded. Thus we frequently find the life of a car that is doing 17,000 miles a year estimated at the same number of years as one traveling only 10,000 under no worse conditions. The time basis by itself in depreciation is most misleading, the mileage basis is far more reasonable, yet neither can wholly disregard the other, since the question of obsolescence comes in.

There are broadly four methods of calculating depreciation:

- By deducting at regular intervals equal proportions of the original cost.
- By deducting a fixed percentage upon the reducing balances.
- By sinking fund.
- By annuity.

The first method is simple and crude, and although it may serve its purpose well enough, where bookkeeping has to be reduced to its simplest elements, people are rapidly getting educated to the second, which is really, merely the inverse of compound interest.

The sinking fund method in practice consists of periodically investing a fixed sum, which at the rate of interest obtainable will amount to the value of the machine depreciated within the time estimated as the life of the machine.

Turning to the data of actual experience it speaks well for the commercial automobile that as yet little in the way of really final figures is available. In the light 2000 to 3000 lb. type of van some of the large London stores have a fairly extensive experience, and Messrs. Shoolbred (who received their first van in 1904 and have several dating from the following year), from the results of their working, assume eight years as the lowest, with a probability of nine and ten years life, averaging 17,280 miles to the year.

Necessarily depreciation must depend very greatly on the men in charge of the cars, but striking an average, experience as shown, the life of a three-tonner on rubber tires, averaging 12,000-15,000 miles a year, may be put at six to seven years, while a five-tonner running 9000 or 10,000 miles annually on rubber tires should easily last six years. With gasoline driven vehicles we have little experience of running on steel tires; practically all the steel tired machines are steam driven, but the writer knows one or two instances in which 3-ton gasoline trucks averaging about 5200 miles a year lasted only be-

tween four and five years. Still, in these cases they had to do a lot of running over rough cobble stone streets.

As an example of what may be done with the heavier type of vehicle the writer recalls one—a 2½-ton Milnes-Daimler, worked by the Midland Railway Company, of England—which in his own recollection has been steadily at work ever since 1905, and is still doing as good service as ever. True, it is rather noisy, but it seems to keep out of the shops.

## A REVIEW OF BRITISH COMMERCIAL CAR DEVELOPMENT

In his presidential address before the British Institution of Automobile Engineers, T. B. Browne paid a good deal of attention to the development of the commercial car side of automobilism. While in the use of the commercial car for passenger work Great Britain stands ahead of other countries. The automobile is not employed for van and truck work to the same extent as it is in America. This, as Mr. Browne pointed out, is probably partly because of the innate conservatism of the British business man, but there are other factors. In the first place the comparatively small capital as yet invested in commercial truck manufacture stands in the way of the makers giving much credit, while the very large capital invested in horses necessarily renders any radical changes very gradual. Still, to the writer's own knowledge, very many large business firms are only waiting until their horses are worn out to replace them by motors. Again the very high work factor of the motor renders its adoption difficult in some cases, for the conditions governing certain branches of delivery work do not allow the motor full scope.

Although it was hardly brought out in the presidential address, the traffic conditions of many of our great cities at present rather militate against the automobile being worked to its best advantage, for these towns are not laid out on modern lines as in America, and the comparatively narrow streets and congestion of horse traffic delay the motor terribly. Still, this is a phase that will pass when the transition period is over.

As an example of what the automobile truck can do, Mr. Browne mentioned the recent British military manoeuvres, for which 110 gasoline cars and 36 steamers were furnished. It took four 3 ton motor trucks to carry one day's supplies for a brigade of about 4000 men, and each did the equivalent work of 3 horsed wagons, whereas it took the motors 4 hrs. to cover 40 miles, and the horse wagons required 2 days for the distance.

Turning to motor 'bus and cab development, Mr. Browne mentioned that on the 31st, August last, London employed 2510 motor omnibuses and 7860 motor cabs as against 533 horse 'buses and 2654 horse cabs. Mr. Browne placed the total number of heavy vehicles in Great Britain and Ireland at about 12,000.

Although the use of the motor truck for private business houses on what may be called wholesale lines has hung fire, signs are evident that it is coming along, and one of the first of these at the present time is the formation of the Home Counties Transport Company, Ltd., which has issued its prospectus for floating a company with an authorized capital of \$1,250,000.





United States Express have been operating Lansden Trucks for 6 years  
Adams Express have 162 Lansden Trucks—some 10 years old and are still giving good service

# LANSDEN

## Ten Years Continued Service

Has Proven the Lansden Electric Trucks to be the most reliable and Economic means of Transportation in all Lines of Trade.

Every effort in the design and construction of Lansden Vehicles is directed toward simplicity, reliability, and increased mileage and carrying capacity, with reduction of weight and current consumption. All of these tend toward better service and therefore lessen cost of operation and up-keep. In proportion to load capacity and mileage ratings the Lansden is the lightest high-grade electric commercial vehicle on the market.

The Lansden Electrics do not require a force of experts or a machine shop to operate and maintain them. They are operated at one-third less average cost than the gasoline. They will outlast any three gasoline trucks, with one-tenth the interruption of service.

# ELECTRIC

When Writing, Please Say—"Saw Your Ad. in the C C J"

# LANSDEN

## GENERAL SPECIFICATIONS

### STANDARD TYPE "M"

<u>Load Capacity</u>	<u>Body Loading Space</u>	<u>Battery Equipment</u>	<u>Miles per Charge</u>
1000 lb. Delivery Car	91" x 46"	Edison—60 A- 4	60
2000 lb. " "	97" x 46"	" —60 A- 6	60
1 Ton Heavy Duty Truck	114" x 46"	" —60 A- 6	50
2 Ton " " "	132" x 50"	" —60 A- 8	50
3½ Ton " " "	144" x 54"	" —60 A-10	50
5 Ton " " "	162" x 57"	" —60 A-12	50

**Frame**—Cold Pressed Steel, Channel Section, Double Heat Treated, Hot Riveted.

**Springs**—Chrome Manganese Steel, Oil Tempered.

**Front Axle**—Heavy Die Forged, I-Beam Type.

**Rear Axle**—Nickel Steel, Die Forged, Machine Set.

**Bearings**—Timken Roller, in all wheels, and Jack Shaft.

**Wheels**—Heavy Artillery Type, S. A. E. Standard.

**Tires**—Special Electric, Make Optional.

**Motor**—General Electric, Guaranteed for 300% Overload.

**Controller**—Continuous Torque Type, 4 Speeds Forward and 2 Reverse.

**Resistance**—Extra Heavy Cast Grid, Street Car Type.

**Drive**—Motor by Pinion to Bevel Gear Differential on Jack Shaft, Enclosed in Aluminum Housing, Running in Oil; Jack Shaft to Rear Wheels by Sprockets and Chains.

**Steering Post**—Inclined, Rigid, with Controller Handle below Wheel.

**Service Brake**—External Contracting on Main Drive Shaft; Foot Pedal at right of Steering Post interlocking with Controller, shutting off Power before Brake takes effect.

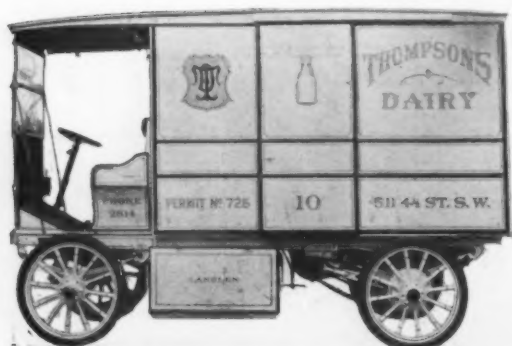
**Emergency Brake**—Heavy Internal Expanding in Rear Hubs; Pedal at left of Steering Post.

**Battery Box**—Underslung, Steel Frame, Alumaloyd Covering; Side Hinged Doors adjustable to Horizontal Position for access to Batteries, which, mounted upon Roller Platforms, may be readily drawn out for attention.

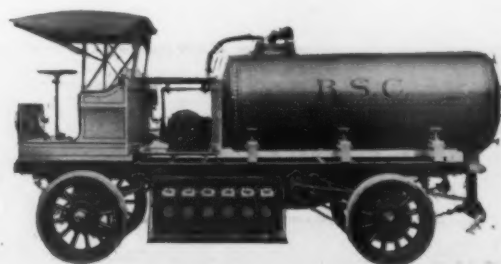
**Batteries**—Edison Nickel Steel. (Lead Batteries Special.)

**Accessories**—Horn or Gong, Ampere-Hour Meter, Electric Dash Lamps, Electric Tail Lamp, License Brackets, Charging Plug and Cable, Battery Filler and Full Set of Tools.

**Bodies**—Type and Style Optional, Especially Designed to Meet Requirements, All Bodies of Highest Grade Construction, Leather Trimmed.



ONE-TON HEAVY-DUTY TRUCK



HEAVY-PRESSURE STREET FLUSHER

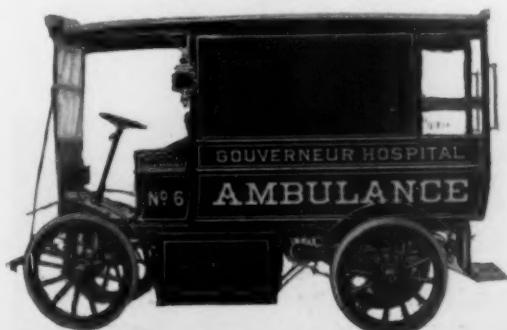
When Writing, Please Say—"Saw Your Ad. in the C C J"

# ELECTRIC

## SOME OF THE USERS OF LANSDEN VEHICLES

Abraham & Straus  
 Adams Express Company  
 Aitken, Son & Company  
 The Arlington Company  
 Armour & Company  
 Atlantic Ice & Coal Corporation  
 Bayonne Hospital  
 L. Bamberger & Company  
 Baker Printing Company  
 Bay State Paper Company  
 Boettger Silk Finishing Company  
 Bellevue Hospital  
 Batcheller & Company  
 Berkowitz Bros.  
 Borough of Richmond  
 Burns Bros. Coal Company  
 Brooklyn Edison Company  
 The Celluloid Company  
 Charity Organization, N. Y.  
 Columbia Storage Warehouses  
 Commonwealth Edison Company  
 Consolidated Gas Company  
 D. L. & W. Railroad Company  
 The Albert Dickinson Company  
 Eagle Printing Ink Company  
 Edison Chemical Works  
 Edison Phonograph Works  
 Edison Storage Battery Company  
 A. Entenman, Inc.  
 George Ehret  
 The Fair—Chicago  
 Fairfield Dairy Company  
 Forbes & Wallace  
 Fritch Baking Company  
 Robert Gair Company  
 Gimbel Bros.  
 Globe Storage & Carpet Cleaning Company  
 Adolph Gobel  
 A. Goodman & Son  
 Gouverneur Hospital  
 Hamburg American Line  
 Harrisburg Light, Heat & Power Company  
 Hartmann Brewing Company  
 Hames A. Hearn & Son  
 Houghton & Dutton Company

International Provision Company  
 Jersey Biscuit Company  
 Jewish Daily News Company  
 Charles Eneu Johnson & Company  
 Lalance & Grosjean Manufacturing Company  
 John C. Letts Grocery Company  
 Lewandos Dyeing & Cleansing Company  
 August Luchow  
 R. H. Macy & Company.  
 Henry Maillard  
 Manhattan Electrical Supply Company  
 Metropolitan Opera Company  
 Miami Electric Light & Power Company  
 Mishawaka Woolen Company  
 New York Edison Company  
 New York Hospital  
 New York Public Library  
 New York & Springfield Despatch  
 F. J. Newcomb Manufacturing Company  
 Eugene E. Nice  
 Olds, Wortman & King  
 Olson Cartage Company  
 Olympus Hotel  
 T. K. Orton  
 Otis Elevator Company  
 D. Pender Grocery Company  
 Presbyterian Hospital  
 Public Service Corporation  
 Sauquoit Silk Manufacturing Company  
 J. H. Small & Sons  
 F. G. Smith Piano Company  
 Springfield Waste Company  
 Steinway & Sons  
 Hotel Stewart  
 The Surbrug Company  
 Toch Bros.  
 United States Express Company  
 A. A. Vantine & Company  
 Virginia Railway & Power Company  
 Wilkinson, Gaddis & Company  
 Winchester Repeating Arms Company  
 Williams Printing Company  
 Witman Bros.  
 Henry R. Worthington  
 Wells Fargo & Company Express



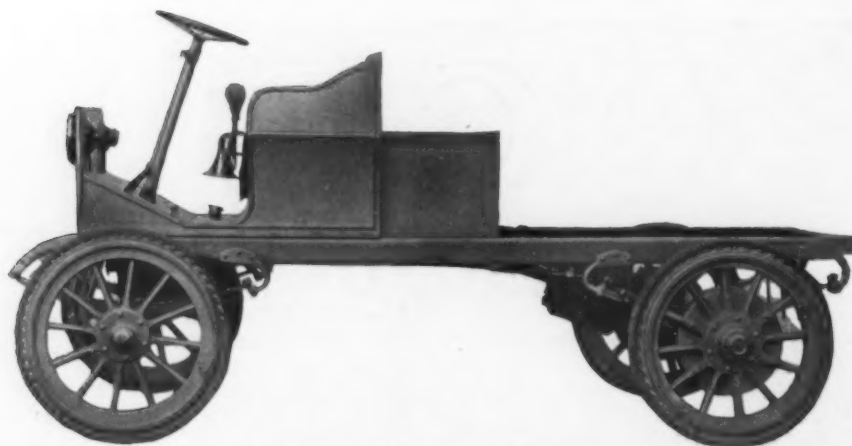
STANDARD AMBULANCE



FIVE-TON TRUCK

When Writing, Please Say—"Saw Your Ad. in the C C J"





SPECIAL LIGHT DELIVERY CHASSIS

# LANSDEN

## Lansden Special Light Delivery—Direct Drive—All Ball Bearing Car

This Special Delivery Car follows the general lines of the Lansden Standard Type "M" but is designed to meet the demand for a Reliable Light Delivery Car that may be Operated at High Speed and Low Cost—Requirements that only an Electric can Satisfy.

The Power Unit is Three-Point Suspended, and Transmission is by means of Enclosed Gears from Motor to Live Rear Axle.

The Battery is mounted upon the Chassis Frame under and back of the Driver's Seat and is fully Accessible.

The Standard Battery Equipment consists of 50 Cells of Edison Type A-4. Average Speed, 15 Miles per Hour. Mileage per Charge, 60 Miles.

THE LANSDEN COMPANY  
NEWARK, NEW JERSEY

# ELECTRIC

When Writing, Please Say—"Saw Your Ad. in the C C J"

# CCJ GALLERY of SALES MANAGERS

PUT THIS ON THE WORLD'S AXES AND YOU WILL KNOW JUST HOW FAR YOU HAVE TRAVELLED, HOW MUCH GASOLINE YOU HAVE USED, HOW MUCH MONEY A CHORUS GIRL MAKES, HOW OLD IS ANNE, HOW MANY CIGARETTES I SMOKE, HOW MANY DROPS IN A BOTTLE OF GINGER-ALE AND HOW FAR IT IS FROM THE SUN TO THE SUN'S ORBIT...

"NEEDER" SMITH - IF YOU WANT TO KNOW JUST WHAT YOU ARE AMOUNTING BY NOT HAVING A VEEVER, ASK SMITH...

E. BARRIE SMITH - VEEVER MFG. CO...

F. A. GROVES... THE SPEEDWELL MOTOR CAR CO.

AT THE TOP OF THE LADDER - HE GOT THERE BY CONSCIENTIOUS ENDURANCE...

SPEEDWELL MOTOR CAR CO.

EXECUTIVE ABILITY

SALESMANSHIP

FAITHFULNESS, EXPERIENCE AND HARD WORK RUNS BELOW...

"ADAMS" - THE WORD THAT MAKES EVERYONE'S FAVORITE WAGON. WHEREVER YOU SEE THE NAME ADAMS YOU CAN BET IT MEANS "DELIVERING THE GOODS."

ISN'T HE HANDSOME?

J. T. ADAMS - THE ADAMS BROS. CO.

A WAGONER SINCE THE WORLD BEGAN...

A MAN WHOSE MAGNETIC PERSONALITY WELDS HIS CUSTOMERS TO HIS FACTORY...

J. C. MANTEHNACK - THE STANDARD WELDING CO.

"LINE 'EM UP" MANTEHNACK - HE PUT THE "SIXTH CITY" ON THE MAP.

MEMORINEE TRUCKS

L. P. FORTIN - D. F. FORTIN CO.

YOU'VE HEARD, OF COURSE, OF A BOTTLED BEER THAT MADE A TOWN SO FAMOUS; AND A WATCH THAT BROUGHT THE DOLLAR HERE.

SO INGRESSAL HAS TOLD US - BUT WHO QUILT UP A TOWN SO QUICK? AND SHOWED US ALL WHICH TRUCK TO PICK?

THAT'S L. P. FORTIN, YOU CAN SEE - HE SELLS THE TRUCK "MEMORINEE"...

ALL EYES ARE ON MEMORINEE

STAND BACK - GENTLEMEN - ONE AT A TIME. (GIVE THAT FACTORY A LITTLE WORK - IT'S WORKING YOURSELF OUT OF A JOB)

IF HE HADN'T BEEN SUCH A GOOD SALESMAN - HE WOULDN'T HAVE ALL THIS ROUGH HOUSE...

AND YOU'VE GETTING DEEPLY TRYING TO CATCH LIVERY BETWEEN RACINE AND CHICAGO.

CHICAGO

RACINE

GEORGE L. LIVERY JR. - PIGGINS MOTOR TRUCK CO.



### COMMERCIAL CAR DEALERS OF SAN FRANCISCO ORGANIZE

An organization has been formed at San Francisco, Cal., by the dealers in commercial cars of that city and surrounding territory. The association will be known as the San Francisco Motor Truck Association.

Its officers are: President, C. B. Lewis, of the Lewis Motor Truck Company; Vice President, C. E. Osborne, manager Speedwell Motor Truck Company's branch; Secretary and Treasurer, H. D. Knudson, of the J. W. Leavitt Company. Its officers were instructed to appoint a committee to formulate a set of by-laws and other rules for the governing of the association. Among its members are the following: Frank Miner, Kelly Motor Truck Company; H. W. Evans, Locomobile Company; W. M. Baxter, Pan American Motor Company; Roy Satterthwaite, Standard Motor Car Corporation; C. Glynn, Auto Sales Company; W. C. Woodman, Woodman Motor Truck Company. Eight or ten other dealers have pledged themselves to become members of the association.

HAWLEY KING COMPANY, Los Angeles, Cal., has taken the agency for the Standard truck.

ATWOOD AUTOMOBILE COMPANY, Toledo, O., has taken the agency for the Toledo trucks.

HENDRICK, DAVID S., Washington, D. C., has taken the agency for the Stewart truck.

CABANY MOTOR CAR COMPANY, St. Louis, Mo., has taken the agency for the Indiana truck.

KELLY-SPRINGFIELD MOTOR TRUCK COMPANY leased building at 2439-41 Calumet Avenue, Chicago, Ill.

BROWN, THOMPSON & COMPANY, Hartford, Conn., have taken the agency for Lippard-Stewart trucks.

GROVE AUTO TRUCK GARAGE COMPANY has leased building at 2431-41 Calumet Avenue, Chicago, Ill.

UNIVERSAL MOTOR TRUCK COMPANY has leased building erected at 2436-38 South Park Avenue, Chicago, Ill.

LINSCOTT MOTOR COMPANY, of Boston, Mass., announces the addition to the Reo line of a four-cylinder two-ton truck.

SANDERSON & BURGHARDT, 727 Main Street, Buffalo, N. Y., have opened a motor truck service station at 734 Main Street.

RIKER, HENRY E. & COMPANY, 2352 Euclid Avenue, Cleveland, O., have been organized to distribute Stewart trucks in Ohio and Indiana.

EMPIRE STATE GENERAL VEHICLE COMPANY, Rochester, N. Y., has taken the agency for the Buffalo electric pleasure and commercial cars.

SCHACHT MOTOR CAR COMPANY, of Cincinnati, O., has established an agency in Erie, Pa., for the firm's heavy truck, light delivery wagon and touring car.

SMITH, R. L. & H. H. COMPANY, agents for Mais truck, formerly located at 1008 Commonwealth Avenue, Boston, Mass., have moved to 17 India Street.

ALLEN MOTOR CAR COMPANY, Hamilton Street, Allentown, Pa., has taken the agency for the trucks manufactured by the Stewart Motor Corporation, Buffalo, N. Y.

MOTOR TRUCK SALES COMPANY, New Haven, Conn., has been incorporated with \$10,000 capital by J. F. Dennison, J. F. Mabry and H. W. Beach. The new company will make the sale of commercial cars a specialty.

MURPHY, ANDREW & SON, Fourteenth & Jackson Streets, Omaha, Neb., are erecting a three-story building west of their shop to be used exclusively for truck storage and service station.

FIRESTONE TIRE AND RUBBER COMPANY, of New York, will erect four-story modern service station at Sixty-third and West End Avenue, New York City, to be used exclusively for the motor truck end of the tire business, where a day-and-night service will be maintained.

STEWART MOTOR CORPORATION, of Buffalo, N. Y., has appointed H. Ross Maddocks, of Mystic Avenue, Medford, Mass., as New England distributor for the Stewart light delivery truck. He has secured the plant of the Teel Manufacturing Company in Medford for a service station.

KISSEL KAR AGENCY, Grand Rapids, Mich., composed of Harry J. Heystek and Geo. V. Brandt, has taken over the agency for Kissel Kars and trucks. The company is now arranging for a service station where free service will be provided for all drivers of Kissel Kars. Oswald Motor Car Company formerly handled the Kissel line in Grand Rapids.

THE HYDRAULIC AUTO-TRUCK CORPORATION, of Los Angeles, Cal., informs us that we are incorrect in stating that they are licensed to manufacture the American La France trucks on the Pacific Coast, but that they have been licensed to manufacture the Manly Hydraulic Transmission which is used on these trucks. This company has the agency, however, for the American La France truck on the Coast.

<b>CAUTION</b> OVERLOADING OR OVERSPEEDING WILL VOID YOUR WARRANTY			
TON TRUCK	NO.	SPEED	MILES PER HOUR
FREIGHT LOAD CAPACITY	STANDARD	LBS.	ACTUAL
BODY WEIGHT ALLOWANCE		LBS.	LBS.
WEIGHT OF CHASSIS		LBS.	LBS.
TOTAL WEIGHT (CHASSIS, BODY AND LOAD)	NOT TO EXCEED		
THE WHITE COMPANY, CLEVELAND, O.			

#### N. A. A. M. Standard Caution Plate for Commercial Cars

Adopted by the National Association of Automobile Manufacturers, Inc., and recommended for use by all manufacturers of motor trucks and delivery wagons. Etched on 20 B & S gage rolled brass. Exact size 9 x 3 in. Letters recessed on polished brass ground. Lines reading "Caution. Overloading or Overspeeding Will Void Your Warranty" and "Freight Load Capacity" are filled with red enamel; the rest of the design with black enamel. These plates are now being made by Etching Company of America, 2526 West Congress Street, Chicago; L. F. Grammes & Sons, Allentown, Pa.; Premier Metal Etching Company, 617 East Eighteenth Street, New York City; The Chandler Company, Springfield, Mass.; Electro Chemical Engraving Company, 450 Nineteenth Street, Brooklyn, N. Y., and C. H. Hanson, Inc., 178 North Clark Street, Chicago.



# How the Engineering Force Can Assist the Retail Sales Department

BY E. S. FOLJAMBE

This is the sixth of a series of eight articles by Mr. E. S. Foljambe, dealing with subjects of interest to agents, dealers and manufacturers. Briefly, the subjects taken up are: Taking On a Commercial Car Agency; The Kind and Location of Salesroom; The Selection of and Instructions to Salesmen; Obtaining Prospects; Carrying the Campaign Into the Prospect's Territory; How the Engineering Force Can Assist the Retail Sales Department; The Agent's Responsibility After the Sale, and Relations Between the Agent and the Manufacturer. We are sure these will prove instructive and interesting reading.—Editor.

## PART VI



At the recent Automobile Dealers' Sales Convention at Indianapolis, Mr. Jones prefaced his remarks with the following statement: "There is no business man in the United States to-day, if he is approached by a real salesman, imbued with the excellence and the value of his product, and knowing it from every angle, who is not willing to talk business."

Here we have in a nutshell a truth concerning salesmanship, but willingness to talk business is only one of the necessary attributes of the sale. He goes on to state further that the salesman must know his product from every angle. Unfortunately for the truck salesman, it is almost impossible for him to know a commercial car from every angle, as this includes its modifications and special forms for all kinds of highly specialized service, which brings in engineering to such an extent that it is usually beyond a salesman who has not had engineering training. There are so many technical details connected not only with the truck itself but with the mechanism of special hoisting, dumping or swivelling bodies, or connected even with the process of manufacture of the purchasers' goods, as this must sometimes be considered, that even the best salesman often finds it a great help to be able to call upon the engineering department.

### Co-operation of Engineering Department Desirable

We will not go into the discussion again of whether the salesman should be an engineer; suffice it to say, as before stated, that he must be at least a "near engineer." He must have the engineering instincts and analytic mind, and a head for rearranging systems and calculating that is usually attributed to the engineer, but in addition to all this he must be a thorough salesman.

In general then it is of advantage to the retail sales department to be able to call upon and be sure of the co-operation of the engineering department, or at least an engineer. Some claim that the engineer should consummate the sale, but with this point of view I do not agree. It is better to allow the salesman to carry through the deal, but be supplied, whenever necessary, with facts or figures, these to come from the engineering department, whenever the salesman finds that there are problems of a mechanical nature to be solved, before trucks can be used to advantage.

### An Example

Take for example the case of a man who wanted to collect overalls from at least three different places, at practically the same time, that is, during the noon rest of the men. The salesman advocated the use of a light truck in place of the three wagons. "But," urged the prospect, "how is it possible for me to get to all three places at the same time with one

machine? I can't afford to buy more than one truck." Here was a case where a word on the part of the salesman to the engineering department brought almost immediately executed designs for a three-compartment body and an arrangement by which these compartments could be left at the various plates just before noon, the overalls placed in them and the truck gather them up on the return trip.

In this way the salesman was able to present at his next interview convincing evidence that the single truck could do this work, and do it much quicker and to better advantage than the three wagons, and that only one driver would be required. With this backing it was a simple matter for the salesman to consummate his sale. But this is a simple case. Many times the salesman finds conditions which must be radically altered, and even then, unless the system is highly organized, the trucks cannot be used to advantage.

### Changes in Buildings Require Engineering Advice

Occasionally the buildings have to be re-designed to make use of a truck to advantage. Here again the salesman is greatly assisted if he can call in an engineer to lay out in tangible form just what alterations are necessary, and how same can be made at the lowest possible cost. The alteration of a building, so as to efficiently use trucks, occasionally introduces strength of materials, as for example the suitable construction of openings over which certain types of machines are already placed and cannot be moved; the method of supporting runways, slides, chutes or platforms. Although these are often details which can and should be turned over to an architect, after it has been decided to make the changes, yet the engineer's judgment is of service in preventing a suggestion by the salesman to the purchaser, to make alterations which, owing to structural weaknesses or superimposed weights, would be extremely costly and impracticable. The mere suggestion by the salesman that such a change would be necessary, when from an engineering point of view it would be seen at once that the change was an impractical one, would be very likely to prevent the sale. Of course it is understood that there are many instances in which it would not be advisable to suggest such changes, but I am dealing with extreme cases in which something radical must be done to make the use of machines efficient. New types of platforms have to be constructed, doorways have to be altered, and sections of platform have to be arranged so that they can be moved. At other times it is necessary to plan for an entirely different method of getting the goods to the loading platform, as buildings that were not constructed since the advent of the power-driven vehicle are often restricted as to the space available for receiving and delivering goods. Suggestions are therefore in order as to how these conditions can be met, and in every case more or less detailed drawings by the engineering department, showing

in black and white the changes, together with conclusive figures as to the possible results, are of the greatest assistance to the salesman. True, a salesman might suggest these things verbally, but this is never as convincing as the actual figures or drawings.

\* It is very difficult at times for a salesman to answer intelligently the objections made by a prospect who may himself be very familiar with machinery and engineering details, but the bright salesman can usually arrange to have the engineering department informed of these technical objections, and by getting their heads together it should be a pretty tough problem that cannot be successfully solved in favor of the truck. But the prospect must be shown these facts.

### Suggesting Changes Within the Plant

Not alone are changes in the building and in the loading and unloading facilities required, but at times it is found necessary to actually alter the method of manufacture or the type of container, or the system of making the goods ready for shipment. This can be done sometimes by changing the shape of boxes so that they can be more readily transmitted by chutes, traveling belts or gravity conveyors to the loading platforms, or so that they will pack to advantage in the truck. Occasionally, by shifting the space occupied by one department, the finished product will be brought nearer to the point of packing and shipping; or the department in which the final processes are carried out can be located conveniently to suitable elevators, so as to avoid unnecessary handling and prevent loading delays, which, as has so often been stated, completely annul truck efficiency. Take an instance illustrative of this point: A salesman investigated conditions of a prospect's business for his own benefit, making a special study of existing conditions and the actual time of loading and unloading, time on the road and all other kindred items. These were put in graphic form. The same was then done with the proposed system using power-driven vehicles. The prospect, when shown, was greatly surprised to find that his wagons were standing idle waiting to be loaded, practically one-third of their total working time. The new arrangement showed conclusively that this could be avoided. This broadminded merchant immediately said to the salesman, "You have shown me the weakness in my business, and I shall install trucks and eliminate this fault."

### Analyzing Transportation Conditions

The above shows how the salesman should analyze the conditions in order to present forcibly the facts to his prospect. Some salesmen are capable of thoroughly analyzing the transportation conditions of even the largest manufacturing plants, taking into consideration road conditions, grades, weather, nature of the product to be shipped, etc. They can successfully lay out a system, with routes so planned that the different sizes and types of commercial cars

used will each operate efficiently in its territory, but in most cases the assistance of the engineering department in this work will be of the greatest advantage.

### Special Body Designs by Engineering Department

In the design of special truck bodies often lies the solution of a difficult or apparently impossible problem. One man wants to carry coal in the daytime, and milk or some other equally dissimilar commodity during the night. Here again the engineering department can suggest the solution by special body designs, with removable sections, or even by a system of interchangeable bodies with rollers, overhead trolleys or other means of shifting them easily and with dispatch. Another man must have a body so arranged that, although packed with goods, he can easily get at the various portions of the load without shifting or removing in any way other portions. This again calls for a special design, a sketch of which, if it appeals, is almost sure to result in a purchase. This is work for the engineering department and not for the salesman, although it is the salesman's business to recognize when such conditions must be met and the engineering department informed so that they can look into the matter at once and prepare drawings.

Systems of loading, cages and means for transporting these from one part of the plant to another, systems of interchangeable bodies and methods by which they can be easily handled with the fewest possible men, are constantly being worked up by successful agencies and branch houses, through the aid of the engineering department or the individual engineer, or in a few cases by the salesman himself if he happens to possess the happy faculty of being an engineer and a salesman.

(To be continued.)

Motor Truck Warranty No. _____ Dated _____ 19____ Issued to _____ ON Commercial Vehicle No. _____ Sold by _____ Order No. _____ Dated _____ 19____ Delivered to Purchaser _____ 19____		
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### N. A. A. M. Standard Motor Truck Warranty

The National Association is just about to issue books of these, bound in board covers like bank check books, to those of its members who desire to issue them to their customers. With the desire to extend the use of the standard warranty as rapidly and as widely as possible, the lithographed warranties are not confined to use by members of the Association, but are being offered to non-members at a price barely sufficient to cover the cost of production, which is less than it would cost an individual company to have similar warranties printed for it exclusively. The name of each individual company will be printed in the warranty in place of the "Sample Motor Truck Company," with corresponding change of address. Changes will be made also, as desired, in the titles of officers under the signature spaces. No change, however, will be made in the wording of the body of the warranty. The over-all length of the warranty, including stub, is 12½ inches, and the height, 7¼ inches.

## Trucks in Wanamaker Service Make Possible Enormous Christmas Delivery on Scheduled Time



**B**ACK to normal running in one day following the enormous Christmas business of John Wanamaker, Philadelphia, is the record made by Mr. McFarlan, superintendent of delivery. "For practically eight days' running," he said, in speaking of the wonderful work of the motor delivery service, "we handled in the neighborhood of 50,000 packages a day, in spite of the very bad weather conditions prevailing at Christmas. Through snow and slush, but not once tied up on account of the weather is our record, nor for that matter for any other reason, in fact, for two years we have never yet been stopped, or even seriously delayed in our commercial car delivery on account of weather conditions."

### Wanamaker's Philadelphia Fleet

The Wanamaker store, Philadelphia, is now using a fleet of 83 motor-driven trucks, 50 of which are Autocars, 25 Fords, 4 Packards, and 4 electrics, the latter being C. T. truck, of the Commercial Truck Company of America. The work of the trucks was greatly praised for the fact that they were able to handle such an enormous delivery without delays, the goods often reaching the homes of the customers before the purchasers themselves, which may be considered a remarkable performance. Some of these machines operate directly from the downtown store, while others are stationed and operated from sub-stations. One of the latter is in Germantown. At this station are kept all the cars for the Germantown delivery, and all goods for sections along York Road, Bristol Road, Germantown Pike, Norristown and Jeffersonville. The larger trucks during rush seasons haul continuously from 6 A. M. to 12 midnight from the store to the sub-stations, and from this point sub-fleets of commercial cars which never go to the main store, take the packages and deliver to the residences. Under ordinary running conditions the big trucks carry to these sub-stations only at night such goods as are sold after 3 o'clock in the afternoon. These goods are then delivered the next morning. All goods sold up to 3 o'clock in the afternoon are delivered the same day, and as before stated, even reach the homes of the purchasers before they do themselves. Even during rush seasons no out-

side hauling is done by contractors, all the work being taken care of by the Wanamaker equipment.

### Two Emergency Repair Cars

Under ordinary running conditions, about five cars are held in reserve, this having been found sufficient. In addition, two emergency repair cars, one a Ford and the other an Autocar, are stationed in West Philadelphia, at the general garage. These cars can be telephoned for at any time, and rush to the scene of trouble with spare parts, so that delays of any length are very unusual, and only in very few instances has it been necessary to transfer a load, and not a single instance of any serious trouble has occurred during the rush season.

During the holidays this year, it started to snow on the night of the 23rd, and continued to snow until noon of the 24th, making a fall of more than six inches following rather warm weather, so that the roads were in very bad condition. In spite of this, the cars operated successfully, largely owing to the fact that all but five, namely, the four electrics and a Packard truck are operated on pneumatic tires and fitted with anti-skid chains.

During the rush considerably over 50,000 packages were handled in one day. The increase can be judged from the fact that under ordinary conditions during the off season, the daily haul amounts to about 30,000 packages or less, so that during the month of December the delivery system is called upon to handle practically double the amount of goods.

### From Counter to Residence

The course of a package in a large modern department store from the counter to the residence of the purchaser is somewhat devious, but very rapid. After the purchase, it passes immediately to the wrapper, is inspected, slides down a spiral chute landing on a belt in the basement, which carries it immediately to a distributing table, where with a rapidity which is nothing short of marvelous, it is grabbed by a router, the address read, and a number put upon it indicating in which route of the city it is to be delivered. It is then tossed onto another belt which conveys it to a distributor who distributes the bundles into the drivers' bins, which are small hand trucks or cages. These are wheeled to the elevator, from there to



Part of the Ford Outfit Used by Wanamaker



the sidewalk and the packages passed into the wagon, the driver arranging the load from the sidewalk. The truck then goes directly to the suburban section and the packages are delivered, or if to a distant suburb, the package is carried by one of the larger trucks to the distributing station where a smaller vehicle carries it to the home of the purchaser.

When asked about drivers, the superintendent stated that he had to take on new men during the holidays, these men being taken on early, however, so that they are broken in by the time the rush begins.

### Deliver Anywhere Within Forty-Mile Circle

The trucks deliver within a radius of twenty miles, and occasionally to more distant points such as West Chester, twenty-eight miles. They reach daily, places which could not be covered by horses, except at considerable intervals, and then the horses would not be fit for service the next day.

When asked as to the efficiency of delivery by trucks and horses, Mr. McFarlan said, "The efficiency of the cars over the horses is so great, why, one would scarcely believe it if one was not in the business. If a horse covers forty miles in a day, he is good for nothing the next day, while a car can cover sixty or sixty-five miles, and be ready the next day. There is really no limit within reason, the only limit is the endurance of the man. We frequently deliver loads of furniture to Reading, a distance of about sixty miles one way, and get back the same day, after setting up the goods in the house. We run over to Trenton in the morning, and get back by 4 o'clock in the afternoon. I would hardly be prepared to go back to horses, although we still use about 200 horses in our delivery service. We used to have as high as 500 horses, but no comparison can be made because we are delivering very much more goods, and covering decidedly more territory than we ever did in those days."

### Efficient Garage Service

The ability of the cars to handle the rush is largely due to the efficient service of the Wanamaker garage where the cars are cared for. Here there are two gangs of men and the place is always open. During the rush the emergency cars were gotten out on the instant whenever called for. Although the trucks are not laid up at the end of any set period of time or distance covered, they are inspected regularly each night, and the driver marks upon a blackboard whether anything is wrong or whether anything should be looked to. The inspection is so carefully made that the trucks are overhauled before destructive wear occurs.

Those in charge expressed themselves as extremely pleased with the performance of all the commercial cars, especially during the strenuous winter holiday season.

## MOTOR VS. HORSE-DRAWN APPARATUS IN HEAVY SNOWS

At the last convention of the International Association of Fire Engineers an interesting paper was read on Motor vs. Horse-Drawn Apparatus in Heavy Snow, by J. Smart, fire chief of Calgary, Alberta. The paper read as follows:

The preparation of this paper might, perhaps with greater benefit to the Association, have been assigned to some member having experience where the snowfall is greater than in Alberta, where we have very dry snow, and while we have drifts often to a depth of 2 ft. or even more, the precipitation is seldom so great in a short time as to afford a severe test as in some of the Eastern cities where 18 in. to 2 ft. fall in 24 hours.

I have had in use for the past three winters a 40 h. p. Squad wagon and during that period have never been tied up at any time, never failed to reach a fire under any weather conditions, and after this experience of the motor apparatus in snow, I have come to this conclusion after careful consideration.

In any condition where the use of wheels is possible, the motor-driven apparatus has the advantage, and only in use of runners instead of wheels has the horse-drawn apparatus the questionable advantage, for in severe storms horses will not face the average blizzard of the Northwest—and the Motor will.

We might perhaps eliminate very deep snow conditions to some extent from this discussion, as motor-driven apparatus is seldom, as yet, in use except in cities where the streets are in fair condition soon after snowfall—where streets are covered with sleet or hard frozen snow with crust, they are simply impassable under their worse condition to horses, while presenting no difficulty to the motor driven apparatus. Then again under light flaky snow, the writer has seen 75 per cent. of the horses straining in attempting to reach a fire on asphalt pavement up a slight grade where large flakes of the "Beautiful" has fallen to the depth of only a couple of inches; here the motor would be the vehicle.

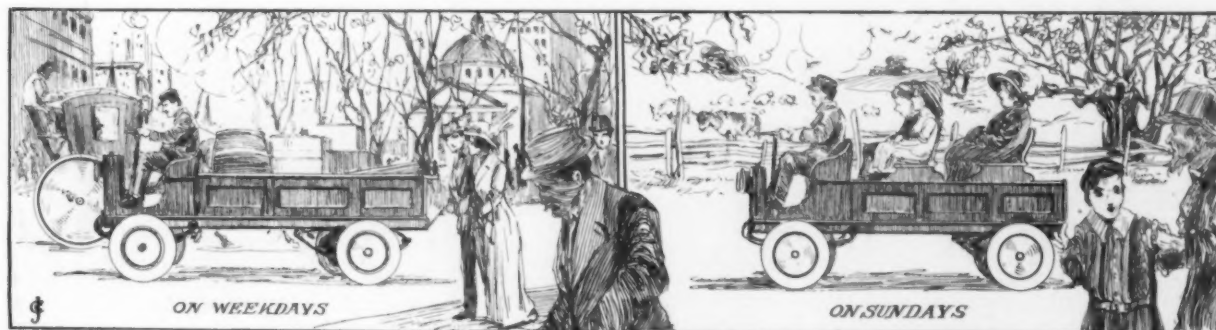
Especially under snow roads does the advantage of the motor prove itself from the standpoint of territory capable of being covered from each station, to say nothing of the advantage it has when arrived at the scene of the fire.

The society for the prevention of cruelty to animals never had a spasm at seeing a motor standing facing a blizzard.

To sum up; my experience extending over the past three winters has settled the question of the use of the motor apparatus in snow or any other condition, and I am recommending the purchase of no more horse-drawn apparatus for any purpose.

## TAMPA FIRE CHIEF BUYS POWERFUL HUDSON

Chief W. M. Mathews, of the Tampa, Fla., Fire Department, has organized his Flying Squadron around a new 6-cylinder Hudson which he recently purchased. The car is equipped with chemical extinguishers and other apparatus for fighting incipient fires. The Tampa Fire Squadron precedes the regular Fire Department to each fire, and carrying five men, it is often possible to extinguish fires when they are small. Helmet, shields, coats and all that is necessary to do its effective work, are carried in the rear of the car.



## COMMERCIAL CAR AGENCIES WANTED BY:

**Buick Sales Company, Inc.**, 102-4 State Street, Utica, N. Y., wants gasoline commercial cars of 1 to 2 tons capacity, to sell at \$1000 and \$1500.

**Geo. H. Baltz**, 215 Coffeen Street, Watertown, N. Y., wants cars of various sizes and prices.

**Roseberry Bros.**, N. Water Street, Belvidere, N. J., wants gasoline and electric commercial cars of various sizes and prices.

**Leon I. Britton**, Richmond Road, New Dorp, Staten Island, N. Y., wants gasoline cars of 1000 to 5000 lbs., to sell at \$600 to \$5000.

**W. G. Bell Motor Car Company**, 415 Congress Avenue, Austin, Tex., wants gasoline commercial cars of 3 to 5 tons capacity.

**H. G. Raymond**, 718-20 Barr St., Ft. Wayne, Ind., wants gasoline trucks of 1 to 6 tons capacity, to sell at \$1000 to \$5000; and 500-lb. delivery cars, to sell at \$750 to \$800.

**E. C. Belden**, Suffield, Conn., wants a light, powerful farm tractor, for the tobacco industry.

**Wm. J. Ewen**, 4820 Wegg Avenue, E., Chicago, Ind., wants light delivery truck, also cars from 1 to 5 tons capacity, at various prices.

**Luis Montesinos**, Calle Grabador Esteve 6, Valencia, Spain, wants trucks of 1, 1½, 2 and 3 tons capacity.

**The Motor Sun**, Dr. T. L. Bloom, Proprietor, Weatherford, Texas, wants gasoline commercial cars of small sizes, to sell for \$1000 and less.

**W. E. Harvey**, Newman Grove, Neb., wants gasoline and electric cars of 1 ton capacity, selling at \$1000 and under.

**August Gilbertson**, Karlstad, Minn., wants small gasoline commercial cars.

**Auto Garage Company**, Spruce & Water Sts., Manistee, Mich., wants gasoline and electric cars of all sizes and prices.

**O. C. Miller**, Union, Cass County, Mich., wants gasoline and electric cars of 1000 to 2500 lbs. capacity, to sell at \$700 to \$1200.

**Daly Automobile Company**, Hettinger, N. D., wants gasoline cars of 1 to 2-ton capacity, to sell at \$1000 to \$1800.

**Byron Corson**, Choteau, Mont., wants gasoline cars of 1-ton capacity, to sell under \$1000.

**R. Rannen**, Raymond, Minn., wants cars of various capacities and prices.

**Alphonso Walrath Company**, Fort Plain, N. Y., wants gasoline cars of 1½ to 2 tons capacity, to sell at medium price.

**Ed. S. Gregg**, Nebraska City, Neb., wants cars of various capacities and prices.

**Vollmer Apgar Auto Company**, Monroe, La., want gasoline cars of 1000 to 2000 lbs. capacity, to sell at \$1000 to \$3000.

**P. R. Davis**, Perry, N. Y., wants gasoline cars of 1500 lbs. to 3 tons capacity, selling at \$800 to \$2500.

**H. C. Worcester**, Roodhouse, Ill., wants gasoline cars of 1 and 1½ tons capacity, to sell at approximately \$1000.

**George P. Wilson**, Birmingham, Ala., wants gasoline cars of 800 to 1500 lbs. and 1 to 3 tons capacity, to sell at \$500 to \$3000.

**Frank D. Stoop**, P. O. Box 316, Kalispell, Mont., wants gasoline cars of different capacities and prices.

**Robert Henry**, 259 E. Market St., Akron, O., wants gasoline cars of 1000 to 3000 lbs. capacity, to sell at various prices.

**Shelby Auto Company**, 518 Shelby St., Bristol, Tenn., want gasoline and electric cars of 1 and 2 tons capacity, to sell at \$1000 and \$2000.

**Potters Motor Car Company**, East Liverpool, O., want gasoline cars of ½, 1, 2 and 3 tons capacity, to sell at various prices.

**Lake Park Implement Company**, Lake Park, Ia., wants gasoline second hand cars of 3000 lbs. capacity, to sell at various prices.

**Ideal Garage**, Frederick, Md., wants gasoline cars of 1000 to 2000 lbs. capacity, to sell at \$600 to \$1500.

**Dr. E. D. Trimmer**, High Bridge, N. J., wants gasoline cars of 1 to 2 tons capacity, various prices.

**Christopher McDowell Auto Company**, 600 E. 4th St., Olympia, Wash., wants gasoline cars of ½ to 3 tons capacity; various prices.

**Wilson Sturnes**, Bellevue Ave., Hammonton, N. J., wants gasoline and electric cars of various types and capacities, to sell at various prices.

**Carle & Jones**, Main St., Belfast, Me., want gasoline and electric cars of various capacities and prices.

**Alameda Garage**, 2150 Central Ave., Alameda, Cal., wants gasoline and electric cars of 1500 lbs. capacity, to sell at not over \$1200.

**C. A. Alexander**, Globe, Arizona, wants gasoline cars of 1500 lbs., 1, 2 and 3 tons capacity, to sell at \$1200 up.

**J. Harry Cook**, Nelson Ave., Cooperstown, N. Y., wants gasoline cars of from 1000 to 4000 lbs. capacity, to sell at \$500 to \$2500.

**John Gerhardt**, E. Fifth St., Larned, Kan., wants electric cars of large capacity, to sell at \$3300.

**E. P. Kimmey**, 1507 W. Genesee St., Syracuse, N. Y., wants gasoline and electric cars of various types and prices.

**Winston-Salem Auto & Rubber Company**, Waughton & Lexington Sts., Winston-Salem, N. C., want gasoline cars of 600 to 2000 lbs. capacity.

**Mohr Auto Company**, 5th & Madison Sts., Bay City, Mich., wants gasoline and electric cars of 1000 to 2000 lbs. capacity, to sell at various prices.

**High Point Motor Company**, Commerce & Hamilton Sts., High Point, N. C., wants gasoline cars of 1 to 4 tons capacity, to sell at \$500 to \$2000.

**Charles R. Varney**, King St., North Brookfield, Mass., wants gasoline cars of 1000 lbs. capacity, to sell at various prices.

**C. H. Monroe**, 208 Main St., Searsport, Me., wants gasoline cars of 1500 lbs. capacity, to sell at various prices.

**Wm. M. Banschback**, Evanston, Ill., wants gasoline and electric cars of 1000 lbs. to 10 tons capacity, to sell at \$1000 to \$8000.

**Sutherland Auto Air Appliance Company**, 718-720 S. 2nd St., Louisville, Ky., wants gasoline cars of ½ to 2½ tons capacity, to sell at \$750 to \$2250.

**Commercial Auto & Repair Company**, 325-7-9 E. Commerce St., San Antonio, Tex., wants gasoline cars of 800 lbs. to 3 tons capacity, to sell at medium prices.

**Carlson Brothers**, 430-434 Grand St., Bridgeport, Conn., want gasoline and electric cars of 1, 2, 3 and 5 tons capacity, to sell at \$1500 up.

**George E. Seidler**, 126 E. Jefferson St., Springfield, Ill., wants gasoline cars of 1 to 5 tons capacity, to sell at various prices.

**Geo. D. Guilbert Auto Company**, 17 Union St. (rear), Waterbury, Conn., wants gasoline cars of 1 ton to 3 tons capacity, to sell at various prices.

**Protsman & O'Neil**, 436 Ferry St., Vevay, Indiana, want gasoline cars of 500 lbs. to 3 tons capacity, to sell at \$750 to \$2500.

**David E. Gring**, 810 Douglass St., Reading, Pa., wants gasoline cars of 1500 lbs. capacity, to sell at \$800 to \$1200.

**Auto Inn**, H. O. Ewing, Prop., Cor. 2nd & Mill Sts., Middleport, O., wants gasoline cars of 1½ to 3 tons capacity, to sell at low price.

**Michael McGlenchey**, 1811-21 Master St., Philadelphia, Pa., wants gasoline and electric cars of 1 to 3 tons capacity, to sell at medium prices.

**Miami Motor Car Company**, 124 Main St., Hamilton, O., wants gasoline and electric cars of 1000 to 1700 lbs. capacity, to sell at \$900.

**The Model Motor Car Company**, 350 Hanover St., Hamilton, O., wants gasoline cars of 1500 lbs. to 3 tons capacity, to sell at various prices.

**Grenada Garage**, Grenada, Miss., wants gasoline cars of 1500 lbs. capacity, to sell at \$900.

*Note*.—Inquiries of the above character will be inserted for our subscribers without charge of any kind.

This service, however, is only for subscribers and those wishing to take advantage of it and who are not subscribers, should send their subscription order and remittance with the necessary data for the notice. *Advertisement*.

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## Classified Advertisement

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### SELLING AGENCY WANTED—ESTABLISHED TRUCK

Company producing a high grade line of two, three and one-half and five ton trucks desires to communicate with substantial and established agency with a view to making contract for marketing its entire output on an extremely liberal commission basis. Address "K," care this Journal.

## Indianapolis Motor 'Bus Line

BY C. B. HAYWARD



CITIES are usually so laid out that the character of the residential districts is inversely proportional to their proximity to transportation lines. The closer to a trolley line, the poorer the neighborhood and vice versa so that ease of access to the street cars is only to be had at a corresponding sacrifice of desirability. This applies more particularly to the older and more settled parts of the majority of cities in the East and Middle West. As the city spreads and new districts are built up, their character is not necessarily subject to the same rule. This has led to a condition that will be found to prevail in practically every city with a population in excess of a hundred thousand. The better residence streets are more or less isolated. True, they are seldom more than a few blocks either way from a street car line, but the modern demand for convenient access to facilities make them

To provide the districts that they lap with a more adequate transportation service than the car lines afforded, the Rapid Transit Motor Company was organized a little over a year ago. The equipment purchased consists of seven one and one-half ton White chassis provided with bodies designed especially for the purpose. The latter seat 20 passengers comfortably and have a maximum capacity, standing and sitting, for 35. By placing the only entrance directly opposite the driver's seat, the services of a conductor are dispensed with, the cars thus being of the modern "pay as you enter" type. It will be noted in the cuts that both the driver and the entrance are at the right side, and this connection, Mr. Gardiner, the general manager of the company, mentioned, that while the single entrance served the purpose of minimizing labor costs in the running of the 'buses, considerable trouble was experienced with the door becoming blocked by



**Rapid Transit in Indianapolis**

Two White Cars fitted with pay-as-you-enter type bodies and having unusually heavy type wheels. The tire equipment is of solid type, single in front and dual in rear. It will be noticed that the driver's compartment is completely enclosed

seem very much out of the way, and especially in stormy weather. The invasion of such neighborhoods by trolley lines is neither desired nor desirable. Property owners wish to maintain the character of the district and to do so it is necessary to preserve its state of comparative isolation.

The remedy for conditions of this nature is to be found in the auto 'bus line, and the success of an experiment that has been carried out in Indianapolis during the past year should be of value to other cities in which similar conditions are found. While Indianapolis is a city that radiates almost uniformly from a common center, there being no natural obstacles to prevent it spreading out over the flat prairie to an indefinite extent, residence and manufacturing interests have to a very large extent become segregated—the former north of the central dividing line, or Washington Street, and the latter south of it. This has simplified the problem to a considerable degree. The two streets selected, Delaware and Meridian, run north and south and parallel each other several blocks apart.

passengers attempting to get on and off at the same time. On any future equipment purchased by the company this will be avoided by the employment of a left hand control of the machine and the use of an entrance and exit, both on the right side of the body, but at different ends. To avoid accidents, folding steps will be used at each door and both of the latter will be controlled by the driver from his seat through levers. This design has been worked out by Mr. Gardiner as the result of his experience in handling crowds with the present style bodies and represents a considerable improvement over the latter.

Both of the lines are of about the same length, the Delaware street round trip representing 5.3 miles, and the Meridian street 5.1 miles. Traffic on the former is the heavier of the two and four 'buses are run on it, there being but two on the latter. This permits of having one of the machines in the shop at all times for emergencies, though during the year they have been in service the chief attention required by the machines has been in the nature of repairs to and repainting of



the bodies. Regular service is maintained from 6 A. M. to 11 P. M., each of the cars running on a regular schedule and averaging in excess of 150 miles per day. The drivers are paid in accordance with their experience in the handling of the machines, receiving 20 cents an hour during the first month of employment, 25 cents an hour for the ensuing six months and a maximum of 27 cents after this period of probation. The value of this plan is reflected in the gasoline consumption of the machines in the hands of different drivers who will average as low as six miles to the gallon of fuel and as high as ten, in accordance with their skill. The experienced hand also keeps up with his running schedule without difficulty, thus maintaining the service on an efficient basis. With gasoline at 14 cents this makes the average daily fuel bill per car \$2.70 or .018 cents per car mile. Oil and grease bring this up to a total of .0194 or practically 2 cents per car mile for fuel, oil, grease and electric lighting of the interior provided by separate storage batteries carried under the body, a generator driven by the motor not having proven practical.

Just how much this is increased by tire expense and depreciation, it is difficult to figure definitely after having had but a single year's experience. Originally the chasses were fitted with 34-in. wheels and equipped with hard rubber base tires. It was found that these wheels were too small and likewise that this type of tire flattened necessarily under the weight, beside tending to separate at the joining of the tread with the hard rubber base. After having more or less unsatisfactory service from these parts they were abandoned in favor of the Goodyear demountable type on 36-in. wheels, though Mr. Gardiner is of the opinion that further improvement would be obtainable by increasing the wheel diameter to 40 in. The present tire equipment has been giving very satisfactory service but has not been in use long enough at the present writing to afford definite figures of tire mileage or cost. The pavements traversed are asphalt and in the main, are in good condition.

To combine the maximum comfort consistent with the economy of solid rubber tires, all except one of the chasses have been fitted with the Sewell patent wheels. The cut showing two 'buses facing the same way illustrates the slight difference in their appearance due to this change, the one at the left having the ordinary wheels, and the one at the right, the Sewell type. This is practically a wheel within a wheel, there being two felloes separated by a continuous row of hollow rubber rolls extending across the felloe and all the way around the wheel. Circular rubber bands or flanges also extend around the wheel and connect the outer and inner flanges on either side. These flanges convert each of the hollow rolls into a small air-tight chamber and they are held in place by steel flanges placed over them and bolted through the two felloes. The outer felloe and its hard rubber tire is accordingly supported entirely by the hollow rubber rolls or air chambers, while lateral motion is prevented by the heavy rubber flanges. The only drawback to the use of these wheels on a passenger car is the fact that their extra weight retards the machine's acceleration and makes it slow in getting under way, and as stopping and starting comprise a very large part of the day's work of a 'bus, this is a more serious disadvantage than it might appear to be at first sight. Apart from this, they have proven very satisfactory.

So far the chief mechanical trouble encountered has been due to the vibration and pounding causing the fuel line between the tank and the carburetor to break. This has been

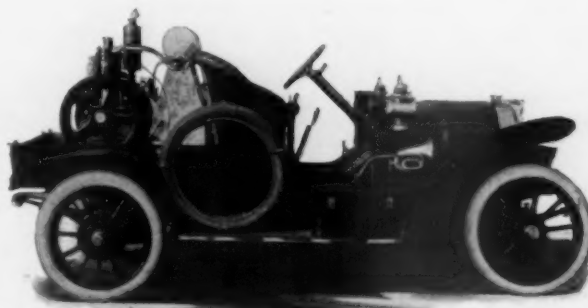
remedied by the use of heavier gage copper tubing and the provision of extra coils in the line to make the latter more flexible. Otherwise, there have been no causes of road stoppage and no occasion for repairs to any part of the power plant or transmission of the seven White chasses, which are of the shaft driven type.

Where the question of earnings is conceived, the line is at somewhat of a disadvantage in having to charge a low fare. Single rides are 5 cents, while tickets are sold at the rate of six for a quarter or twenty-five for a dollar, and as a large part of the patronage is derived from permanent residents along the line, the average fare is but slightly over 4 cents, or less than half that of the straight 10-cent fare charged on New York and New Haven 'bus lines. The distance in this case, however, is much shorter. Despite the drawback of a low fare, the line has proven profitable and its business is on the increase. A chart plotted of the year's earnings shows an extremely wide range of fluctuation due in all probability to the fact that the line serves a "shopping" patronage so that on stormy days and Sundays the returns fall to a low point, while on bright days and Saturdays they go to the opposite extreme. The income is increased by about five to six hundred dollars a year through the leasing of the advertising privileges.



**Special Dump Body**

Here is shown a five-ton truck, manufactured by the Locomobile Company of America, equipped with a special type dump body. The body, when dumping, slides half way down the inclined base pieces and then dumps, thus throwing the material clear of the truck wheels. A hand-operated winch is employed to replace body.



**Bridgeport Engines**

The Bridgeport Motor Company, Inc., Bridgeport, Conn., manufactures stationary and marine type motors, the latter for use in motor cars. From the illustration it can be noted that one of its stationary gasoline motors is carried on the rear end of a car. This motor is all set up and can readily be put into operation. A salesman covers the outlying districts with this rig, visiting farms, small shops, etc., where industrial power is apt to be required. The power plant of the car consists of a Bridgeport three-cylinder two-cycle motor of the marine type, with a bore of 4½ in. and a stroke of 5 in.

## PARCELS AND THE COMMERCIAL CAR



THE introduction of the Parcel Post System will in the near future cause a demand for all types and sizes of commercial cars. Its effects will be far reaching in several directions even outside of the automobile world, but its immediate effect will be a demand for trucks. Not alone will there be a demand by the companies or individuals directly engaged in handling the parcel post matter, but the use of the parcel post system will indirectly cause the necessity for increased speed and efficiency of delivery among retail houses, jobbers, and even among the manufacturers of many lines of goods outside of the automobile trade.

The parcel post delivery will be largely by power-driven vehicles. This business in the cities will be carried on by contractors, many of whom will have to increase their equipment by the purchase of more vehicles especially adapted to the parcel post hauling. The express companies will undoubtedly be affected, as fully fifty per cent. of their business comes within the weight limit of eleven pounds of the parcel post. This means that they will endeavor to compete, especially for local work, and to compete successfully means the introduction of the speedy commercial car. Rural carriers will have to supply their own vehicles and many will purchase small trucks.

The more general introduction of trucks into the delivery of the retail houses will be more or less forced by the increased competition with the mail order houses, as they will be among the largest patrons of the new system. If the retailer becomes a devotee of the commercial car, he will not be satisfied with slow inefficient delivery on the part of the jobber; result—the jobber will be forced into the use of trucks. This again means a large number of sales. In turn the manufacturers will be coerced to a certain extent by the jobbers to increase the efficiency of their delivery systems, and in this way it is believed the influence of the parcel post will rapidly spread to all lines of business, increasing very greatly the sale of motor-driven commercial cars.

### Rates for Parcel-Post Postage

Parcels weighing four ounces or less are mailable at the rate of one cent for each ounce or fraction of an ounce, regardless of distance. Parcels weighing more than four ounces are mailable at the pound rate, as shown by the following table, and when mailed at this rate any fraction of a pound is considered a full pound, and this takes the place of the fourth-class or merchandise rate.

WEIGHT	First Zone		Second Zone 50 to 150 Miles	Third Zone 150 to 300 Miles	Fourth Zone 300 to 600 Miles	Fifth Zone 600 to 1000 Miles	Sixth Zone 1000 to 1400 Miles	Seventh Zone 1400 to 1800 Miles	Eighth Zone All Over 1800 Miles
	Local Rate	50 Miles							
1 pound .....	\$0.05	\$0.05	\$0.06	\$0.07	\$0.08	\$0.10	\$0.11	\$0.11	\$0.12
2 pounds .....	.06	.08	.10	.12	.14	.16	.19	.21	.24
3 pounds .....	.07	.11	.14	.17	.20	.23	.28	.31	.36
4 pounds .....	.08	.14	.18	.22	.26	.30	.37	.41	.48
5 pounds .....	.09	.17	.22	.27	.32	.37	.46	.51	.60
6 pounds .....	.10	.20	.26	.32	.38	.44	.55	.61	.72
7 pounds .....	.11	.23	.30	.37	.44	.51	.64	.71	.84
8 pounds .....	.12	.26	.34	.42	.50	.58	.73	.81	.96
9 pounds .....	.13	.29	.38	.47	.56	.65	.82	.91	1.08
10 pounds .....	.14	.32	.42	.52	.62	.72	.91	1.01	1.20
11 pounds .....	.15	.35	.46	.57	.68	.79	1.00	1.11	1.32

There is, however, another side of this question which, although not directly or exclusively automobile, still is closely associated, and that is the improvement in road conditions. It will be impossible for all this increase in the use of motor-propelled vehicles, especially through rural sections, without giving one of the greatest impulses to the good roads movement which it has yet received.

In the following we give a few of the facts concerning the new parcel post. This is given in such form that it may be cut out and preserved as a matter of reference.

### Parcel-Post Regulations and Rates

All parcels must be securely wrapped.  
No article may exceed a measurement of six feet in combined length and girth.  
Explosives are prohibited.  
Special parcel post stamps must be used on all parcels and on articles of merchandise that formerly went fourth class. The fourth class is superseded by the parcel post.  
Addresses must be plainly written.  
Every parcel must have the card of the sender in one corner.  
Butter, lard, fresh meats, fowls, fish, berries and produce that spoils quickly will be admitted if it is securely wrapped so none of the contents can spill on other matter.  
Eggs must be packed in a basket or other container.  
All perishable articles must be marked "perishable."  
Queen bees, live insects and dried reptiles will be admitted.  
All fragile articles must be marked "fragile."  
Articles of glass, millinery and toys will be admitted.  
Spirituos, malted, vinous, fermented or any other intoxicating liquors are prohibited.  
Matches, kerosene and other oils are prohibited.  
Disease germs or scabs are prohibited.  
Live poultry, birds or animals are prohibited.  
Undelivered perishable articles will be turned over to charitable institutions.  
Parcels may be insured for full value up to \$50 on payment of 10 cents.  
Parcels must be prepared so contents can be easily examined.  
Occupation of a sender of a parcel may appear with his card on outside of parcel.  
"Merry Christmas" and similar phrases can be used.

### Prohibited Articles

Articles that may not be sent by parcel post in addition to those enumerated include poisons, poisonous animals, insects or reptiles; explosives of every kind; infernal machines; pistols or revolvers; any obscene, defamatory or scurrilous matter now prohibited by law; live or dead animals or birds, or live poultry; raw hides or pelts or anything having a bad odor.  
Books and printed matter may not be forwarded at parcel post rates; but only at the pound rates of third-class matter.  
Pies, cakes and other tasty edibles, however, will be transported by Uncle Sam and it may be that in the future grocers will advertise their wares as delivered postpaid.  
The thirty-nine sub-stations have been divided into ten routes, and a motor car delivery wagon will be assigned to each route. Each car will be manned by a driver and carrier.

### WANTS ENGINE STARTER

A large and well-known taxicab company in one of the largest cities of the East is investigating the engine starting field with the idea of equipping its taxicabs with such devices. The device must be simple and applicable to cars having high tension Bosch ignition only. Manufacturers desiring to submit data should address same to J. H. P., care of this Journal.

### TRUCK AS FIRE HORSE

During a recent disastrous fire in Swedesboro, N. J., a Kissel Kar truck at Woodbury was utilized to pull the Woodbury fire engine, weighing 9000 lbs., to Swedesboro. With 25 men loaded on the truck, the run was made in 48 minutes, over road conditions which would have made it impossible for horses to accomplish the feat. The fire was checked.

JOHN H. EAGAL has resigned his position as district manager of the Oldsmobile Company, at San Francisco, Cal., and has joined the forces of the Consolidated Motor Car Company, of San Francisco, agents for the Pope-Hartford truck. Mr. Eagal will have entire charge of the commercial car end of the business.

## Hydraulic Pressed Steel Co.



## TRUCK FRAMES

$\frac{1}{2}$  TON TO 10 TON

HYDRAULIC PRESSED STEEL CO.

CLEVELAND, OHIO

R. B. McMULLEN, General Sales Agent, Chicago, Ill.

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ONE-TON  
CHASSIS  
MODEL D



ANY  
STYLE  
BODY

## *"Little Giant"* COMMERCIAL CAR

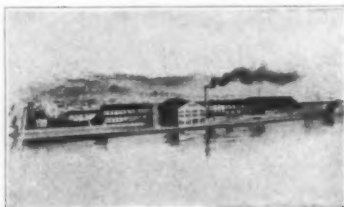
has been saving thousands of dollars for its owners—the most economical truck.

**Little Giant** Commercial Cars are used in all kinds of industries and under all kinds of conditions.

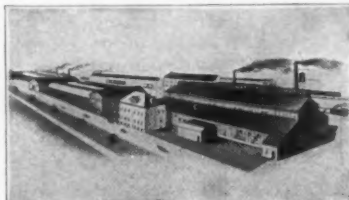
They have proved their worth and efficiency everywhere—the same high standard set by all our other products which have been on the market for over twenty years.

We make the whole car in our own factories. Every part is the best that money and skilled labor can produce. Our factories are the most modern and largest in the country, comprising six big plants in different parts of the United States. All under the supervision of a \$6,000,000 corporation.

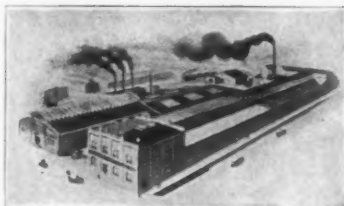
**Every car guaranteed by us.**



FRANKLIN PLANT No. 1



FRANKLIN PLANT No. 2



CLEVELAND PLANT



DETROIT PLANT

ADDRESS DEPT. M.

# Chicago Pneumatic Tool Company

FISHER BLDG., CHICAGO

50 CHURCH ST., NEW YORK

Branches All Over the World

## Responsible Dealers:

We want *responsible dealers*. We are the most responsible concern in the commercial car industry and want responsible dealers to represent us.

We have the quickest selling and biggest profit proposition on the market.

We want to connect with the dealer who appreciates the co-operation of a \$6,000,000 corporation like ourselves.

We have had over twenty years of selling and manufacturing experience with over twenty thousand satisfied customers using our products in all corners of the globe.

Your prospective customers want to know the financial standing of the company manufacturing the truck they are going to buy. There is no doubt about our standing, it is recognized the world over.

Our products hold the highest standard and the **Little Giant** is one of these products.

Get in touch with us at once—territory being snapped up rapidly.

# Curtis



CURTIS MOTOR TRUCKS are MANUFACTURED (*not just put together*) by old-established Machine Tool Manufacturers, where mechanics have been EDUCATED to work to exact measurements and accuracy—by this we mean to within one ten-thousandth of an inch. For years the manufacturers of the CURTIS MOTOR TRUCK have been building lathes, planers and special machinery for turning out duplicate parts where precision must be guaranteed, and machines inspected and tested by engineers of renown.

DO YOU THINK IT PROBABLE OR EVEN POSSIBLE FOR MANUFACTURERS OF THIS CLASS OF MACHINERY TO TURN OUT AN INFERIOR MOTOR TRUCK? If you are in doubt and are interested in Motor Trucks, make it your business to see the "CURTIS."

In buying a Truck to handle your business, do not buy a car for the looks of the body, wind shield, lamps, etc., but pay particular attention to the *machinery and the way it is put together*. THIS IS THE SECRET OF ANY CAR'S DURABILITY. On the car that you are thinking of buying, are you sure that the many vital parts, which are concealed under fancy bodies and drivers' cabs, are made of the right material, properly designed and aligned so as to withstand the strain of rough roads and steep hills? It is not so much the load you carry on the truck that consumes the power as it is the way the engine, transmission and driving mechanism is put together. Accuracy as well as material are the things that count.

***A few good agency propositions are still open***

Write for catalog "B" for further information

**THE CURTIS TRUCK IS THE LAST WORD IN MOTOR  
TRUCK BUILDING**

**Pittsburgh Machine Tool Company, Manufacturers, Braddock, Pa.**

# CRAMP

## Gear Bronzes



1-TON GEAR

Cramp's metals will give longer life—resist wear and abrasion better—will withstand excessive strain and shock and heavier starting torque than any other gearing metals. Through merit alone, Cramp metals have achieved dominant place as the world's best metals.

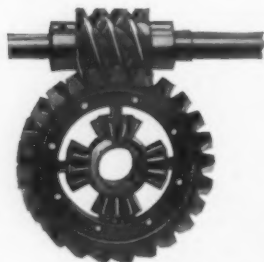
It is no advantage to import metals, we manufacture absolutely the best and save you duty, freight and time.

We furnish the metals and castings for Hindley Spiral Gears.

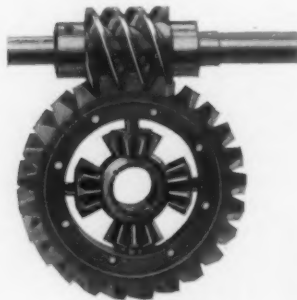
Write us—we can show you how Cramp's metals will better your products.

**The William Cramp & Sons Ship & Engine Building Co.  
PHILADELPHIA**

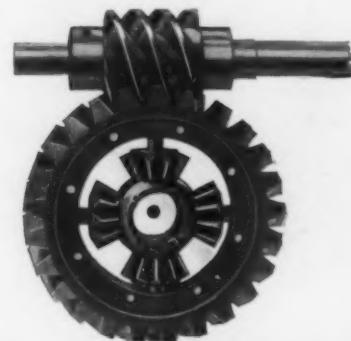
When Writing, Please Say—"Saw Your Ad. in the C C J"



2-TON GEAR



3-TON GEAR



5-TON GEAR

Metals look much alike. Before buying metals it is vitally important to consider the experience and reputation of the manufacturer, to know that the metals you use possess the qualities that will stand up in service and give the maximum of efficiency and wear.

The name CRAMP has for nearly a century set the highest standard in bearing metals. Cramp's metals are the result of almost a hundred years' experience. Their metals have been used during these hundred years for worm drives for every type of machine, from turret turning gear to lifting bridges, elevators, marine railways, etc.



# HINDLEY

## Spiral Gear Axle

### Is the Satisfactory and Economic Solution of Your Power Transmission Problem

Hindley Spiral Gear Drive is the one drive that minimizes power waste, always maintains its high efficiency—lessens upkeep cost.

The one drive that is direct—and machined from Cramp's metals is the one drive that endures.

Hindley Spiral Gear operates in oil, with continuous contact and direct uniform motion, it is absolutely silent and the easiest running. Being completely housed, it is positively dirt and trouble-proof.

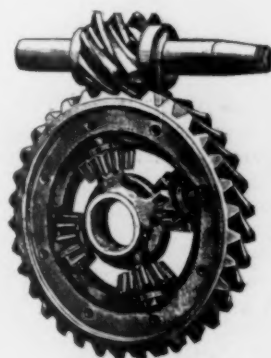
In Europe this style of gear has for ten years proven its superiority and is standard on the best freight motor vehicles. Spiral gear drive is the one dominant feature worth investigating for building better cars—upkeep cannot be kept down until the transmission power waste is eliminated.

The number of leading American vehicle manufacturers using Hindley Spiral Gear Axles is steadily increasing and everyone of them has met with the utmost success.

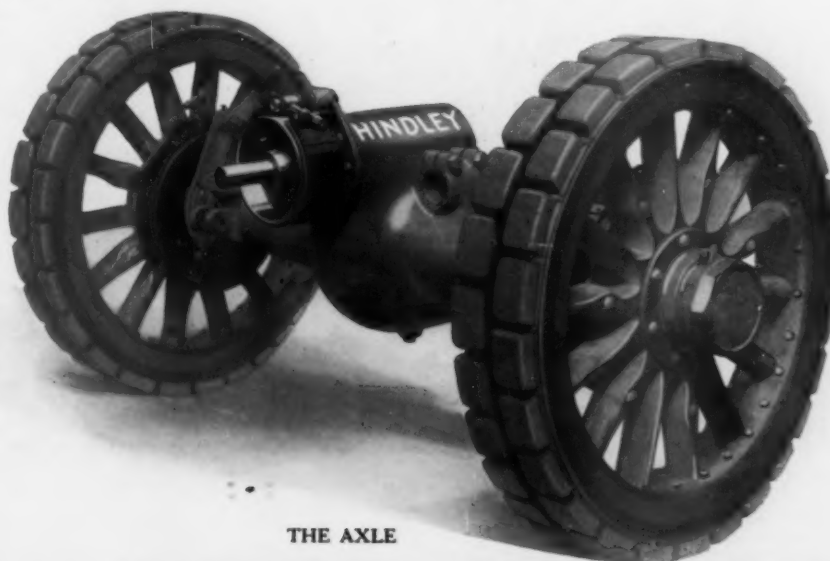
We machine gears, preferably spiral or straight—but will cut to any specifications desired.

Hindley Spiral Gear is the ultimate drive.

*Get posted, we will be glad to furnish you full particulars. Write now, while you have the matter in mind.*



THE GEAR



THE AXLE

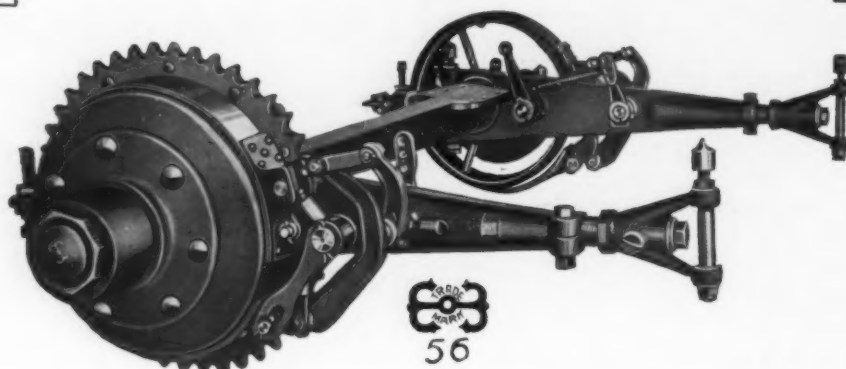
**HINDLEY GEAR COMPANY, 1105 FRANKFORD AVENUE, PHILADELPHIA, PA.**

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# SHELDON

## ONE-TON

### E-11 BRAKE EQUIPMENT



Look at these brakes—Tested with a perfect score on “FAMOUS GIANTS DESPAIR” Mountain, as illustrated in the November issue of this paper.

“GIANTS DESPAIR” was for five years the scene of the National Hill Climb, and was discarded on account of the dangerous course—BUT it has no terrors for SHELDON E-11 One-Ton Brakes.

**Study its features:**

14" Pressed Steel Drums.

Both brakes on rear axle, keeping all braking strains on rear axle, eliminating all strains from jackshaft and chains.

Service, or external brakes, is wrap-up type, very simple and effective, taking the same firm hold when truck is reversed as when it is running forward.

Emergency, or internal brake, is expanding type, self-intensifying. The method of supporting the brake is clearly shown in the illustration.

Radius rods and brake spider are best grade

steel castings, with liberal bearing surface which swivels on rear axle.

All brake levers are drop forgings extra heavy, reducing the deflection to a minimum and preventing any lost motion between the foot pedal and the brake band, itself.

Radius rod shank, drop forging 1½" diameter, chrome nickel steel heat treated, and swivels in drop forged yoke, the bearing surface being lubricated by compression grease cup.

All partings and bearings are efficiently lubricated.

Axle, one piece solid forging with integral spring pads, R A 1 with steel wheel or R A 10 with hubs for wood wheels.

**SHELDON AXLE COMPANY, Wilkes-Barre, Pa.**

CHICAGO OFFICE—68 East 12th St.

DETROIT OFFICE—1215 Woodward Ave.

# The New **KELLY** Motor Trucks Water-Cooled Trucks



K-30 Motor Truck in the Service of the Brehm Brewing Co., Philadelphia

## Men Who Know Agree

that in our new 1 and 3 ton water-cooled models we score many decided advantages in design and general excellence of manufacture—undisputed advantages which appeal to the prospective purchaser who has learned, not from theory, but hard and practical experience. Some of America's leading motor truck and transportation engineers (those who have had opportunity of studying and testing our new water-cooled models) agree that they excel in their respective classes.

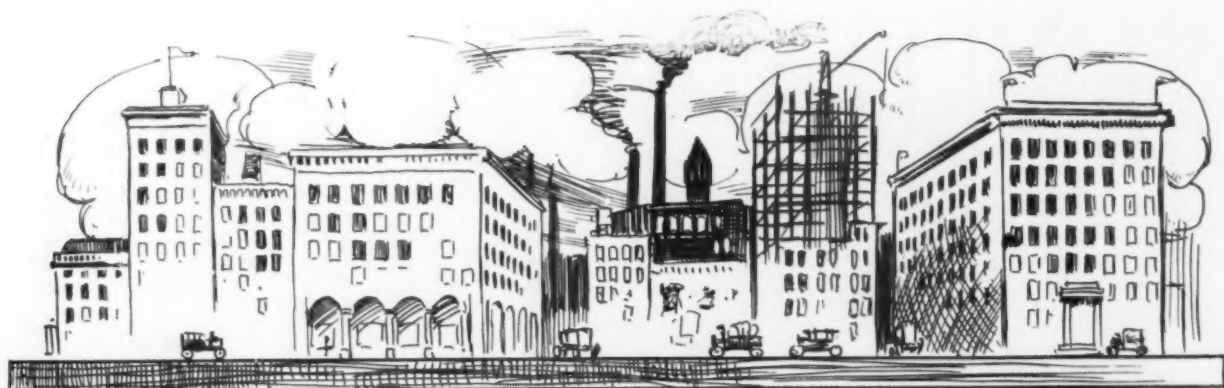
Experience has taught us that to build a big and permanent success for ourselves and our customers we must, first, build honestly and well, and, second, equip with service facilities at factory, at our branch depots and at our agencies throughout the country so that Kelly Motor Truck users may be assured, as nearly as possible, 100 per cent service satisfaction for many years after our product becomes their property.

The motor trucks you buy now must deliver high transportation efficiency for years to come. Make the right selection now. Get with the company that will stand with you, and for you, during the years that are to come. Don't experiment. Master your haulage problems now. Good equipment, backed by a good manufacturing company with complete service facilities, is the answer.

### The Kelly-Springfield Motor Truck Company, Springfield, Ohio

Factory Branches—New York, Philadelphia, Boston, Baltimore, Kansas City, San Francisco,  
Los Angeles, Seattle, Birmingham





# The Mainstay of the Commercial World LAUTH-JUERGENS TRUCKS

**L**AUTH-JUERGENS TRUCKS represent all that is latest and most perfect in the design and construction of commercial cars. In the manufacture of our famous 1, 2, 3 and 5 ton trucks, we have aimed at durability, simplicity of operation, the minimizing of upkeep expense and perfection of motor design and construction.

Our trucks are equipped with the famous Rutenber motor. Hess-Bright ball-bearing transmission manufactured in our own shops from the finest possible tool steel and covered by our own patents, appears on every one of the LAUTH-JUERGENS models.

Prospective truck buyers will do well to remember that we build motor trucks only. All our efforts, all our hope of success are concentrated on this product, and we are able to offer the public a truck whose use insures continued service, small expense of upkeep and the highest possible efficiency in delivery. Our motto has always been "Service to the user," and the LAUTH-JUERGENS reputation guarantees that no user shall be unsupported by this service.

*Write for our complete catalogue*



## LAUTH-JUERGENS MOTOR CAR COMPANY FREMONT, OHIO

# SEWELL CUSHION WHEEL

## Makes life's road smooth for every truck

**50 PER CENT. GREATER MILEAGE GUARANTEED ON TIRES**

**WILL  
DUPLICATE  
ANY WHEEL  
FOR ANY  
SERVICE**

**See our exhibit  
National Truck  
Show  
Madison Square  
Garden  
New York  
January 20-25**

**First Regiment  
Armory  
Chicago  
February 10-15**

**Mechanics' Hall  
Boston  
March 19-26**

The SEWELL CUSHION WHEEL is the only solution of the problem of tire expense in connection with motor trucks.

The use of pneumatic tires on commercial cars is obviously impractical. It means constant repair and tremendous expense. Solid tire treads, on the other hand, while they are durable, are a hindrance to speedy delivery, and at the same time rack a truck to pieces.

The SEWELL CUSHION WHEEL has proved a boon to truck owners, because it supplies the resiliency and light riding qualities of the pneumatic tire, with the durability of the solid tire. It is practically a wheel within a wheel, constructed with a powerful and durable rubber cushion which absorbs the severe shocks of heavy road service, thus protecting the mechanism of the truck, cutting down tire expense and making speedier delivery possible on solid tire treads.

Let us show you what many satisfied users have to say about the wheel which has enabled them to forget their tire expense for periods of time ranging from one year to twenty months. Write for our catalogue.



FOR SALE BY

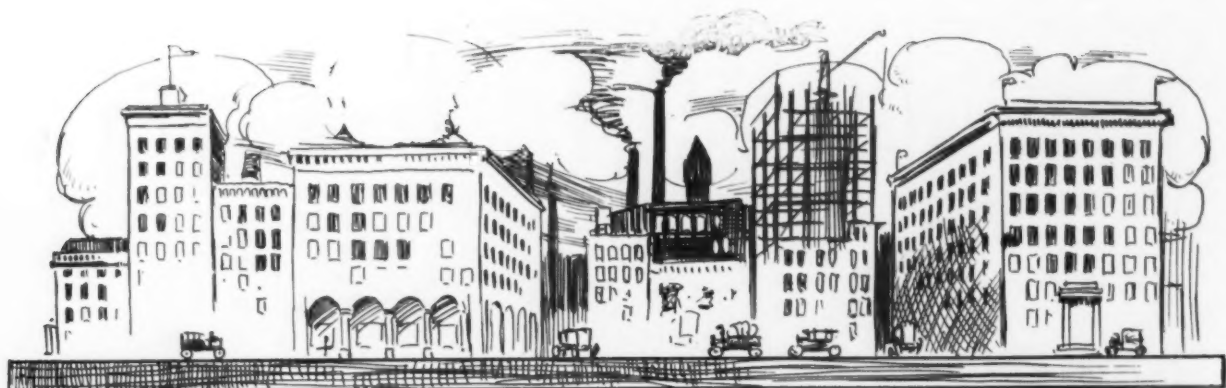
**CORTLANDT F. AMES**

**1114 Michigan Ave.**

Tel. Harrison 8295

**Chicago**

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# The Mainstay of the Commercial World

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*Write for our complete catalogue*



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FOR SALE BY

**CORTLANDT F. AMES**

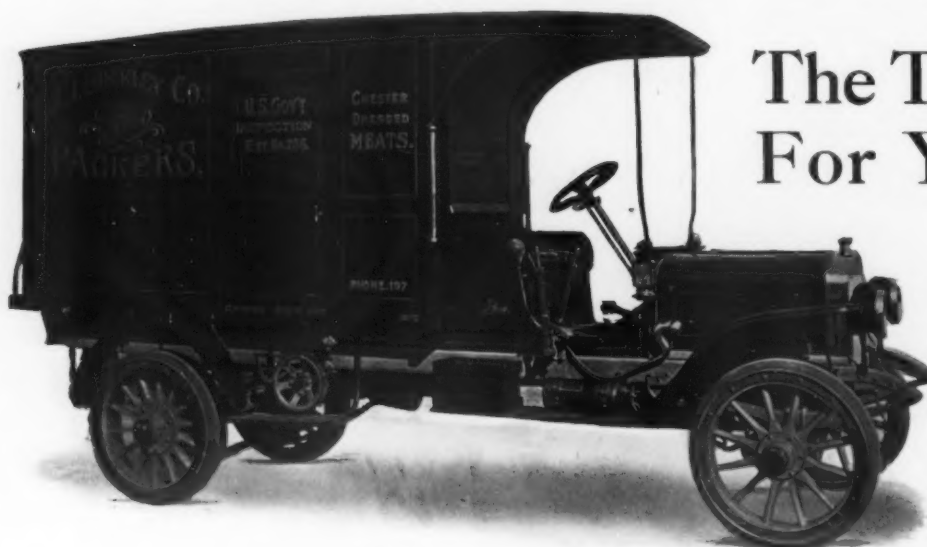
1114 Michigan Ave.

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Chicago

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# ROWE Motor Truck



## The Truck For YOU

### WHY?

Because it is just what you have been looking for.  
It has fewer parts, and combined with its simplicity it has strength.  
It has the durability and will stand up and do your work.  
It has the power to climb hills and make time on the levels.  
It is made with the very best quality of materials by skilled mechanics.  
And you have a choice of drives, W-O-R-M G-E-A-R or Chain.  
You have the highest grade and best of everything that should go into a motor truck of the highest type, all for a very moderate price.

#### SPECIFICATIONS:

**MOTOR:** Four cylinders, vertical type, 4 3/4 in. bore x 5 1/2 in. stroke, 40 H. P.; 5 1/4 in. bore x 7 in. stroke, 60 H. P.; 3 3/4 in. bore x 5 in. stroke, 28 H. P.; 4 1/4 in. bore x 5 in. stroke, 35 H. P.; Extreme care in design has been taken to protect all moving parts from dust, and to keep the lubricating oil from leaking out. All attachments and parts of the motor are easily accessible. Magneto, water and oil pumps are gear driven.  
**CONTROL:** Stationary gas throttle on 18-in. steering wheel, and foot control. **IGNITION:** Dual magneto. **RADIATOR:** Honeycomb, square tube type. **CLUTCH:** Multiple disc in oil-tight case. **DRIVE:** W-O-R-M G-E-A-R or double chains on rear wheels. **TRANSMISSION:** Three speeds, selective type, high duty Timken roller bearings, nickel-steel throughout. **WHEELS:** 36-in; artillery type, selected hickory. **TIRES:** Solid, single front, dual rear. **FRAME:** Pressed chrome nickel-steel channel section, heat treated. **SPRINGS:** Semi-elliptic; front, 44 x 2 1/2 inches; platform rear, 44 x 2 1/2 inches. **BRAKES:** Two complete sets on rear wheels, service brake external contracting and operated by foot pedal; emergency brake internal expanding, operated by side lever. **WHEEL BASE:** 144 inches and 156 inches. **TREAD:** 61, 64 and 68 inches. **BODIES:** Made to suit purchasers.

#### PRICES:

1500 lb. Truck, Complete,	\$1800
1 Ton " " "	\$2250
1 1/2 Ton " " "	\$3000
2 Ton " " "	\$3300
3 Ton " " "	\$3600
5 Ton " " "	\$4800

Send for the ROWE Catalog and get Full Description and Specifications.

One to  
Five  
Tons  
Capacity

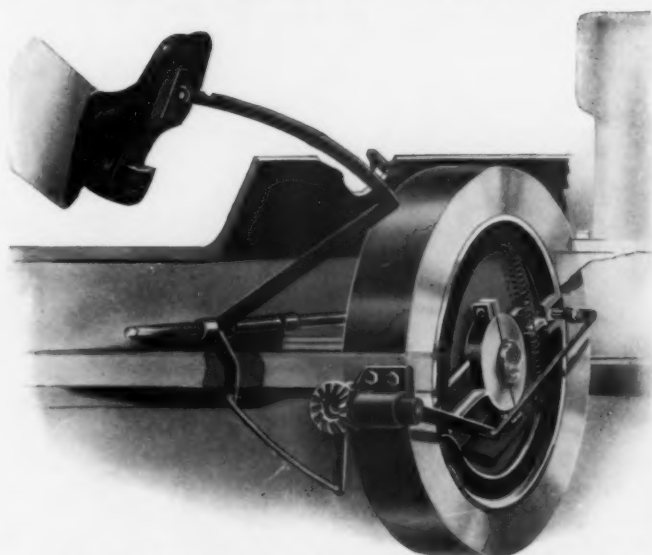


ROWE MOTOR MANUFACTURING COMPANY, Coatesville, Pa.

# Your Motor Works Two More Days a Week Than Your Car!

You don't understand how that is? Easy enough! When delivering the load, especially if the calls are frequent, the driver cannot take the time to stop and start the motor if he has to crank it. Consequently, the engine runs merrily on, consuming gasoline and lubricants from which the proper equivalent in power is not obtained. The constant vibration of the motor also has an injurious effect on the mechanism of the car.

## The Glenard Starter



SHOWING APPLICATION OF STARTER TO EXCELSIOR MOTOR  
35 H. P. Bore, 4 $\frac{1}{2}$ . Stroke, 5 $\frac{1}{4}$ .

*All this waste of time,  
money and energy can  
be saved by the use of*

## THE Glenard Starter

(which has just been perfected)

*for use on COMMERCIAL  
MOTOR CARS—both light  
delivery wagons and heavy  
motor trucks. It has been  
especially designed for  
Commercial Car use.*

It is not an air, gas or electric starter—either of which would soon jar to pieces on truck work—but consists of an expanding frictional clutch, consisting of two expanding rims, 12 inches in diameter, width of the gripping rims, one inch, mounted on a guide or hanger attached to the crank case bearing. It operates in the flange of, or on the face of the fly wheel. This frictional clutch, working in a steel drum, 12 $\frac{1}{2}$  inches in diameter, in connection with gears, beveled 9 to 14, mounted on roller bearings, giving an easy, natural, positive and safe result; obviating all the danger, work and disagreeable features of the old hand crank, and adding none of the uncertain, troublesome, unreliable and damaging features of the many so-called SELF-starters.

There is no shock to any part of the motor with the GLENARD. It cranks with a simple foot pressure, and when not in use no part of it is visible, as the foot lever disappears under the footboard. It is purely mechanical, never gets out of order and lasts as long as any part of your car. The GLENARD STARTER cranks—not once in a while, but always.

If you want to be at the head of the procession, equip your 1913 Commercial Cars with GLENARD STARTERS. You will have the biggest talking point any manufacturer could have, viz:—Economy and Efficiency.

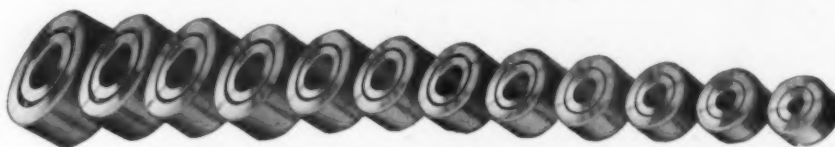
*Write To-day for Complete Information*

**NATIONAL MOTOR DEVICE CO., 3901 Ellis Ave., Chicago**



# New Departure Ball Bearings

**American Made for American Trade**



## Gasoline is going up

and the users of motor vehicles are paying the bills. Abroad, where gasoline costs half-a-dollar a gallon, builders of automobiles *use only ball bearings*.

Why?

Because ball bearings are more thoroughly anti-friction than any other type. Friction scarcely exists at all in ball bearings,—hence, less power and less fuel are required to drive mechanism mounted on such bearings.

Other advantages are:

- Minimum wear;
- Maximum efficiency, endurance and dependability;
- Ease of replacement;
- Freedom from necessity of frequent adjustment;—ball bearings are fool-proof.

The American-made New Departure ball bearings have no superior—are strongly guaranteed and preferred by the majority of American automobile manufacturers.

One such manufacturer says: "More real bearing value than I can get out of any other bearing."

See interesting exhibit and demonstration of this bearing at Space No. 204, Balcony, Madison Square Garden Automobile Show.

**THE NEW DEPARTURE MANUFACTURING CO.**  
**BRISTOL, CONNECTICUT**

WESTERN BRANCH:  
1016-1017 Ford Building, Detroit



## See These Dart Trucks At The Shows

**T**HERE'S a revelation in auto trucks awaiting you at the New York and Chicago Shows. The new 1913 Model Dart Trucks—triumphs of engineering skill and made to sell at exceedingly moderate prices—will be on exhibit for the inspection of truck users and dealers.

The money-making opportunities which these trucks offer to dealers and users are so tremendous as to be positively remarkable. If you intend to visit either of the shows let your attention center on the Dart exhibits and let us explain to you our 1913 proposition

### Prices That Shatter Traditions

We've shattered to atoms the tradition that a substantial, well-built truck with liberal specifications **had to** sell for \$3,000 to \$5,000. The new 1913 Dart Trucks at \$1,100 and \$1,775 include more *actual, tangible* value than can be found in any other truck of the same capacity in the entire world. They set a *new standard of value*. They embody all the meritorious points

gleaned from twenty years of experience. The liberal specifications will amaze you.

### A Remarkable Test

The wonderful performances of Dart Trucks are significant of their exceptional construction. In a recent hill climbing test a Dart truck carried a full load up Giant's Despair Mountain at Wilkes-Barre, Pa.—a grade of 37½%. This performance indicates the efficiency of the Dart—its wonderful durability and power

### Three Models for 1913

The 1913 line of Dart trucks comprises these three chasses—each a remarkable value:

Light Truck .....	\$ 750
Medium Truck .....	1100
Heavy Truck .....	1775

Steel wheels furnished for the medium and heavy trucks at \$100 per truck extra.

Complete specifications and detailed information about our 1913 proposition can be obtained at our exhibits or by writing us at the factory.

### Dart Trucks will be Exhibited at the Following Shows:

#### NEW YORK

Grand Central Palace—Section 42A

#### CHICAGO

Coliseum Annex—Space Q1

*Come and See These Remarkable Trucks or Write Us.*

**DART MOTOR MANUFACTURING CO., Waterloo, Iowa**

# VICTOR BLOCK TIRES



"The All-Year-Round Tire"

You can specify them on your new truck without paying extra for block equipment.

## Why You Should Specify Victor Blocks

BECAUSE—The simplicity of fastening permits the replacement of a block in a few minutes, insuring uninterrupted service.

BECAUSE—Perfect traction and NON-SKID features eliminate the necessity for chains to prevent skidding.

BECAUSE—The exceptional resiliency of the tire and the fact that the blocks are but  $\frac{1}{8}$  of an inch apart enable us to guarantee "no vibration."

BECAUSE—The Victor is Oversize, having 15% broader wearing surface, which increases both the carrying capacity and the mileage.

*Let us send you our handsome new VICTOR booklet*

**The Victor Rubber Company**  
SPRINGFIELD, OHIO





*Hors Concours*



*At the*  
LONDON  
PARIS  
NEW YORK  
CHICAGO  
Shows-  
1913  
*Ball Bearings*

**F&S**  
*FBRETZ COMPANY*  
*Sole Importers*  
*New York City*



# SCHWARZ

---

❑ What is the real factor of safety in a motor vehicle?—The wheels; for depending upon their strength and endurance under stress, the lives of passengers and the value of load are safe or unsafe. The wheels are the great burden-bearers; they are subjected to more strain than any other part of the car; they have to take all the bumps and twists and skids, and carry all the load. Their construction and quality, their strength and reliability should have the careful consideration of every manufacturer and buyer.

❑ The construction of the Schwarz Wheel is calculated to meet every condition. Spokes interlock, forming a tight, immovable assembly, which cannot loosen or weaken under most severe strain. The material is carefully and scientifically selected, and prepared. The product is agreed by all automobile engineers to be the **Strongest, Safest and Most Economical**.

❑ Good wheels mean not only safety, but economy as well—freedom from wheel troubles, breakdowns, repairs and replacements. No thoughtful buyer will purchase a car unless it is equipped with wheels which are known to be strong and safe.

❑ A Schwarz-equipped wagon carries a paid-up policy of insurance against breakdown.

❑ All the leading motor trucks are run on Schwarz Wheels—there's a reason.

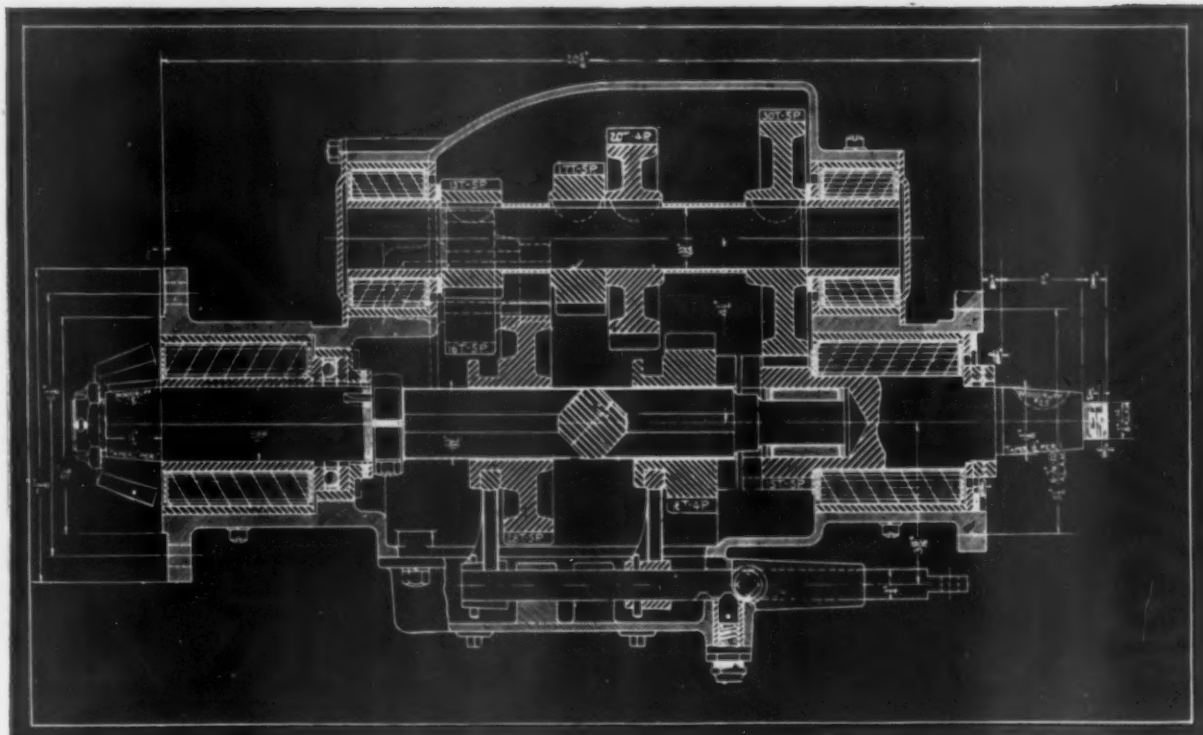
❑ Consult us on design and proportions.

**THE SCHWARZ WHEEL CO., Frankford, Phila., Pa.**

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# WHEELS

When Writing, Please Say—"Saw Your Ad. in the C C J"



# Covert

## Commercial Transmissions

for

1000 lb.	Wagons
1 Ton	Trucks
2 Ton	Trucks
3 Ton	Trucks
4 Ton	Trucks
5 Ton	Trucks
6 Ton	Trucks
7 Ton	Trucks

We are Transmission Specialists—Jackshafts for the above models are supplied by the leading manufacturers.

### Covert Motor Vehicle Company

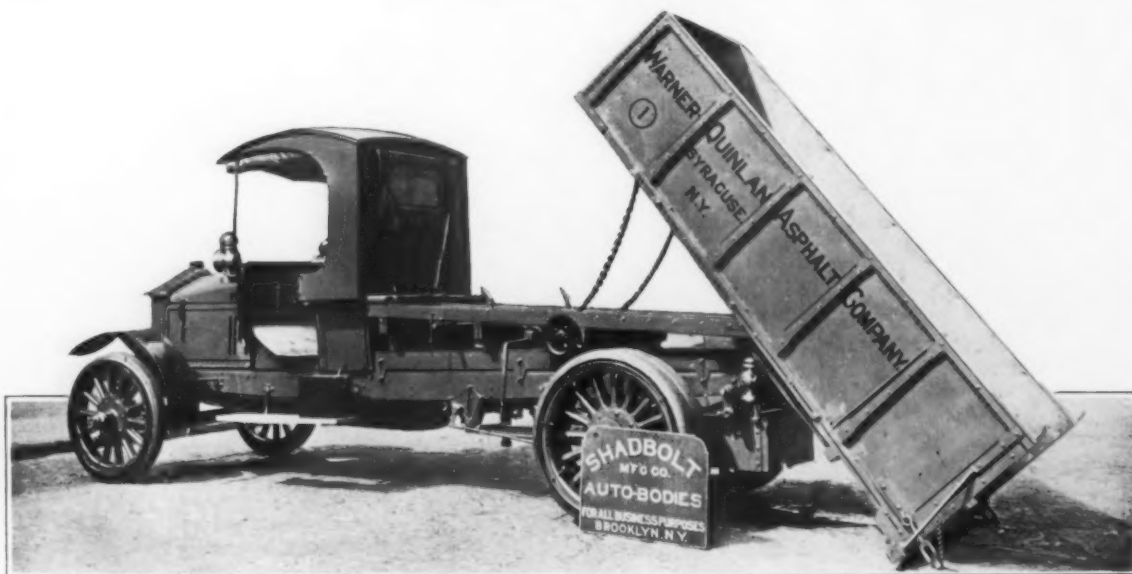
Factory: Lockport, N. Y.

Sales Office: 1422 Ford Building, Detroit, Mich.



When Writing, Please Say—"Saw Your Ad. in the C C J"





# SHADBOLT SPECIAL BODIES

Of every description, for every make of truck.  
Special-designed trailers and semi-trailers.

If you are a prospective buyer or a manufacturer of a truck, you know that to get the greatest efficiency out of that truck the minimum amount of time only, should be consumed in loading and unloading. Your truck makes money for you only when it is in motion. We have made a special study of this condition and have special-designed bodies to handle every known product.

This is not a new problem to us as we made special bodies for [horse-drawn vehicles forty years before the advent of the auto truck.

The sale of a truck very often depends on the prospective customer being convinced that a body can and will be furnished that will suit all of his requirements. Should this occasion arise we can clinch that sale for you. We will submit sketch or photos to meet any special design of body.

*A special invitation is extended to the trade to visit our factory during the Automobile Show, in New York.*

**SHADBOLT MANUFACTURING CO.**  
**FLUSHING AVE. AND CUMBERLAND ST., BROOKLYN, N. Y.**

When Writing, Please Say—"Saw Your Ad. in the C C J"

# Indiana Trucks

BUILT IN 1—1½—2—3 TON MODELS



Two Ton Indiana Truck with Special Stake Body. Chassis, Price \$2500.

**Dealers:** The **Indiana** Agency possesses real money value. We have the most liberal agency contract. If your territory is still open and you are the live party we are looking for, you will be able to make with us a deal that will be to our mutual benefit. To properly market a high-grade truck like the **Indiana** we must have real, live, responsible dealers to act as the link between our truck users and ourselves. We have something special to offer the right parties. Now start something, write us, we will tell you about it, and when writing say something about yourselves.

Our plan is co-operative; we have special features in the **Indiana** and will back up every claim made. Delays are serious—Write at once.

Be sure to see us at the Chicago Show—1st Regiment Armory.

**Harwood-Barley Mfg. Co.** 211 Indiana Ave.  
Marion, Ind.

As to our responsibility—we refer to Dun, Bradstreet or any Bank in our home city. We have a Capital Stock of \$150,000.00, paid in; surplus, \$125,000.00, and other resources amply large for the carrying out of our contracts, saving all dis-



counts, and the proper conduct of our business. Our manufacturing experience covers an uninterrupted period of Fifteen (15) years in Marion, Indiana, and we refer to our record with no small degree of satisfaction and pride.

Where Indiana Trucks are built — the manufacturing plant and general office of the Harwood-Barley Mfg Co., Marion, Ind.

When Writing, Please Say—"Saw Your Ad. in the C C J"

# POL

## We Make Tyres for Commercial Cars Only

All our facilities, our energies, our manufacturing equipment---everything---is devoted exclusively to the solid rubber type.

We have made this a study and conclusively proved that POLACK TYRES give a greater continuous mileage than any other truck tyre manufactured.



# TY

## 10,000 Miles Continuous Service

They are built to give the greatest resiliency---keep down the cost of repair from needless repair.

The largest electric trucks use them because they increase their battery efficiency---more mileage.

# FOR THE

When Writing, Please Say—"Saw Your Ad. in the C C J"



# ACK

POLACK TYRES are now made in S. A. E. Standard in addition to European Standard.

In Europe the POLACK TYRE has long been acknowledged the best and since being made in this country has established the same reputation here.

*We do not make Demountables*---because the Demountable has not proven successful for the commercial car and is unnecessary.

# RES



**New Price Lists** New Price Lists have been issued and are available upon request.

*YOUR INQUIRIES ARE INVITED*

**POLACK TYRE & RUBBER CO.**

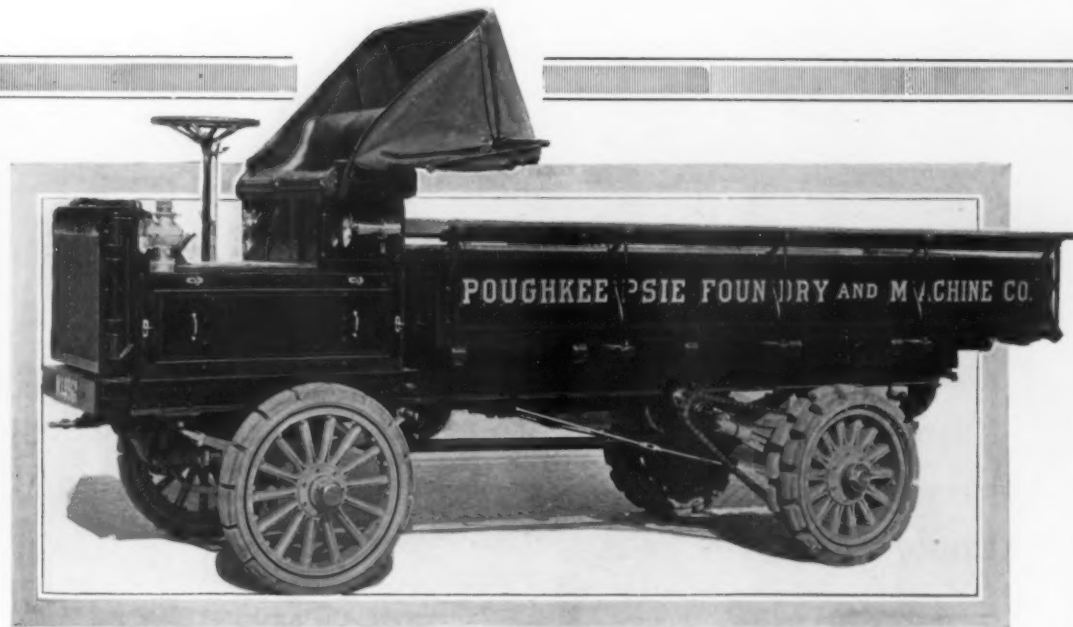
Principal Offices: 246 West 59th Street, New York

Branches and Service Stations:

Boston, Chicago, St. Louis, Washington, Philadelphia, Kansas City, Baltimore, Detroit, etc.

# TRUCK

When Writing, Please Say—"Saw Your Ad. in the C C J"



# KING

## 3½ TON TRUCK

- ☐ Built for hard, steady work—the 100% efficiency truck.
- ☐ The KING is so constructed that the weight is evenly distributed. This means less strain all over, less wear on tires and less power required. With its short wheel base the KING can be more easily handled in tight places and traffic than other cars of one-half its carrying capacity.
- ☐ It is a truck of generous proportions,—large bearings, large wearing surfaces, large tires and ample power.
- ☐ Every part of the truck is easily accessible both for inspection and care.
- ☐ We manufacture only a 3½ ton truck—it is perfect in every detail. The experience of over thirty years of high-class machine construction is concentrated in the KING.
- ☐ **FOR THE DEALER:**—We have a good proposition for the responsible dealer. The dealer who wants the backing of a responsible concern, which has had years of experience in manufacturing and selling, should write at once.

*Some desirable territory still open*

**A. R. KING MFG. CO.**  
**KINGSTON, NEW YORK**



FACTORY: CONSHOHOCKEN, PA.

## 3 Years Ahead

The firm which was sufficiently alert and progressive enough to realize the great advantage of the Wireless Tire three years before the majority of other manufacturers adopted it, naturally has the advantage in experience. For this reason

# GIBNEY WIRELESS TIRES

are the best "buy" for the user of commercial cars. You get the finished, perfect product, not an experiment.

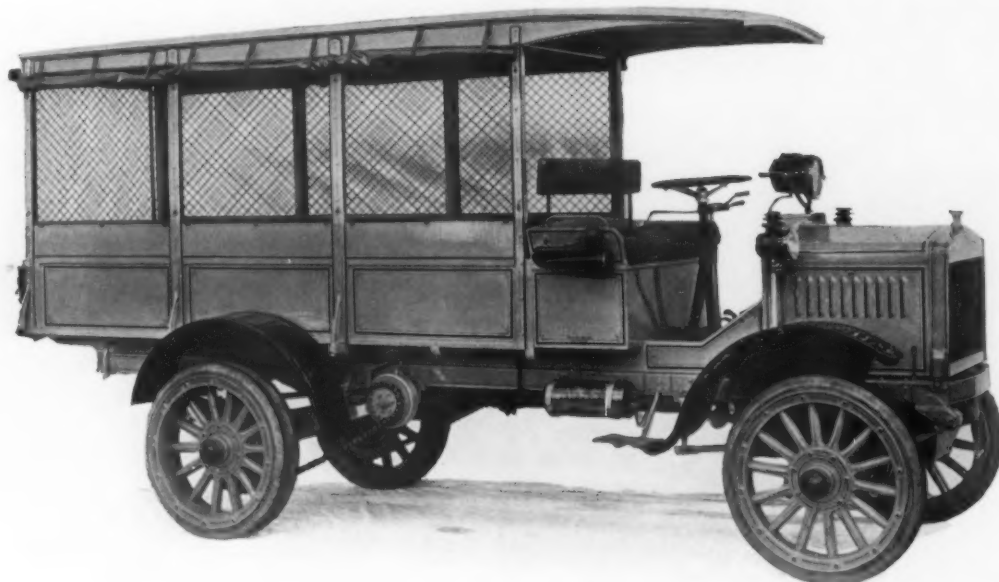
Why take a chance when you can be sure of satisfaction, if you specify the **GIBNEY**.

### **GIBNEY Tire & Rubber Co.**

**Philadelphia**

**New York**





# Wichita Trucks

**Model "A"—One-Ton, Chassis Only—\$1650**

**Model "B"—Two-Ton, Chassis Only—\$2100**

## Partial Specifications

**MOTOR**—Four-Cylinder, Cast En Bloc,  $3\frac{1}{4}$ " Bore, 5" Stroke.

**IGNITION**—Bosch or Eisemann High-Tension.

**WHEEL-BASE RANGE**—110" to 144".

**FRAME**—Pressed Steel, Channel Section.

**TRANSMISSION**—Selective—Sliding-Gear—Three Speeds Forward and Reverse.

**CONTROL**—Gear-Shift Levers in center of car.

**AXLES**—Front—I-Beam; Rear—Rectangular.

**TIRES**—S.A.E. Standard—34" Demountable Type.

**EQUIPMENT**—Acetylene Gas Tank, Swivel Dash Searchlight, Veeder Odometer, Three Oil Lamps, Horn, Tools, etc. (Dynamo Electric Lighting System Furnished on Special Order.)

## IMPORTANT

The total cost of the **WICHITA**, if bought piece-by-piece from the Parts-Price-List, would not exceed the regular list price.

*The WICHITA is not an experiment. It has already made good.*

## LIVE DEALERS WANTED

*Write for Catalog and Agency Proposition*

**"Watch the Wichita"**

**The Wichita Falls Motor Company**  
Wichita Falls, Texas

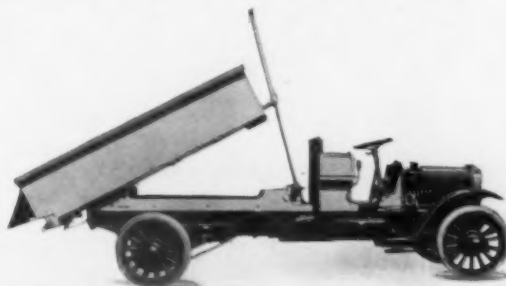
# ATTERBURY TRUCKS



## ATTERBURY MODEL B—1 TON

The sensation of the New York Motor Truck Show will be found in space 22-A, Grand Central Palace. One of the most complete and attractive lines of motor trucks and delivery cars will be in this space. Besides the 1500-pound delivery wagon, the one, two and three-ton trucks will be an Atterbury Automatic Dump Truck. Trucks in various sizes from a delivery wagon, including 1500-pound delivery car, one, one and one-half, two, three and five-ton trucks.

The Atterbury line will be shown at the Automobile Shows:—Grand Central Palace, Space 22-A, January 20-25th. Rochester, N. Y., at Exposition Park, January 27th to February 1st; also at the Chicago Show in the Armory and Coliseum.



## ATTERBURY MODEL D—3 TONS

**Atterbury Motor  
Car Company**



**Buffalo, New York**

*Write Department L for our  
catalogue*

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13,055 Magnetos Shipped in October

13,165 Magnetos Shipped in November

## 1913 sees more Remy Magnetos in use than all others combined

**M**ORE than three hundred of the most representative organizations in the entire automobile industry chose the Remy Magneto exclusively for 1913.

More than three hundred of the greatest engineers in the industry gave this action their stamp of approval.

More than ten thousand dealers were previously consulted by the manufacturers.

More than three hundred thousand satisfied users of Remy Magnetos during 15 years gave volume to this tidal wave of demand for the Remy Magneto for 1913.

And the many years of Remy success is emphasized in the 1913 season, when the greatest attention is being paid to choice of equipment.

### *Are these facts significant to you?*

The Remy Electric Company is the pioneer manufacturer of magnetos in this country—one of the first in the world.

It is the world's largest manufacturer of magnetos.

It created "Ignition Service."

We have more than fifty branches and service stations in North American motor-ing centers for intelligent service to Remy users.

More than 1,000 men are employed to build Remys.

This great force facilitates construction and deliveries with scientific, automatic,

time-saving, accurate machines — protected by a fireproof factory.

These men are electrical and mechanical experts drawn from every civilized country of the globe.

The Remy Electric Company has as a result of its tremendous volume greater buying facilities than any other ignition concern.

These facts, combined with the simplicity of the Remy construction, make it logical for the Remy Electric Company to offer the best motor car electrical equipment for the lowest legitimate cost.

## See the Remy Electric Starting, Lighting and Ignition Exhibit Space 135 Madison Square Garden, New York Show

*Remy Electric Company, Anderson, Indiana*

### Service Stations

Albuquerque, N. M.  
Atlanta, Ga.  
Baltimore, Md.  
Boston, Mass.  
Buffalo, N. Y.  
Charlotte, N. C.  
Cincinnati, Ohio  
Cleveland, Ohio  
Chicago, Ill.  
Columbus, Ohio  
Detroit, Mich.

Indianapolis, Ind.  
New York City, N. Y.  
Kansas City, Mo.  
San Francisco, Cal.  
Dallas, Texas  
Denver, Colo.  
El Paso, Texas  
Grand Rapids, Mich.  
Houston, Texas  
Jacksonville, Fla.  
Los Angeles, Cal.

Louisville, Ky.  
Memphis, Tenn.  
Milwaukee, Wis.  
Minneapolis, Minn.  
Nashville, Tenn.  
New Orleans, La.  
Norfolk, Va.  
Omaha, Neb.  
Philadelphia, Pa.  
Pittsburgh, Pa.  
Portland, Me.

Portland, Ore.  
Providence, R. I.  
Rochester, N. Y.  
San Antonio, Texas  
Savannah, Ga.  
Seattle, Wash.  
Spokane, Wash.  
St. Louis, Mo.  
Syracuse, N. Y.  
Utica, N. Y.  
Washington, D. C.

Canada Vancouver, B. C.  
Calgary, Alberta

Montreal, Que.  
Winnipeg, Man.

Hamilton, Ont.  
Toronto, Ont.

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When Writing, Please Say—"Saw Your Ad. in the C C J"



# *The Lange Motor Truck*

## *IT MADE PITTSBURGH A LEVEL CITY*

**L**ike "The beer that made Milwaukee famous" the Lange truck made Hilly Pittsburgh a level city. Equipped with a powerful motor of the famous Continental design, an "Always in Mesh" transmission and high-class workmanship, it was destined to become universally famous.

For two years all Lange trucks were sold and operated in "Pittsburgh." Until now nearly a hundred are testifying daily to their superior quality and durability. Write for a list of Pittsburgh users; then write the users for confirmation of our claims.

Having "made good" in Pittsburgh, we have enlarged our facilities and are now prepared to deliver promptly in other territory.

**This is our first advertisement, Mr. Dealer;  
if you are interested write us at once.**



## *LANGE MOTOR TRUCK CO.*

### *PITTSBURGH, PA.*



## **The Largest Exclusive Automobile Spring Factory in the World**

**Our plants cover three and one-half acres**

Reliable springs are more important on Commercial Cars than on Pleasure Cars, realizing which, we use only our best grades of steel in Commercial Car springs.



## **The use of our springs**

on your truck is an insurance policy against interruptions in service. Our springs are sufficiently strong to withstand overload, and sufficiently flexible to absorb destructive vibration when the load is light.

## **THE PERFECTION SPRING COMPANY**

Main Office and Plant No. 2, Central Ave. and E. 65th St., CLEVELAND, OHIO

# The "Exide" Batteries

## and their

### INSTRUCTION BOOK

This page contains the complete instruction book for the care and operation of the "Ironclad-Exide", "Exide", "Hycap-Exide" and "Thin-Exide" Batteries.

It is an illustration of the "freedom from care" which the owners of these batteries secure. There are no "don'ts" in these instructions.

<p>USE PURE WATER ONLY FOR REPLACING EVAPORATION</p> <p><b>INSTRUCTION BOOK</b> For the Operation of the</p> <p><b>"Exide" Vehicle Batteries</b></p> <p><b>GENERAL</b> <i>Discharge</i> <i>Unnecessary Charging</i> <i>Standing Discharged</i> <i>Caution</i> <i>Adding Water</i></p> <p>THE battery may be discharged, without injury to the plates, at any rate of current it will deliver. The battery should be promptly recharged upon reaching 1.7 volts per cell when delivering the normal service rate stamped on the name plate.</p> <p>It is uneconomical to charge the battery more frequently than once a week unless the service requires it. A battery should never stand completely discharged.</p> <p>Keep naked flames (match, candle or lighted cigar) away from the battery at all times.</p> <p>Keep the level of the electrolyte always above the top of the plates by replacing evaporation with <u>pure water</u> (never anything else) to a height of one-half inch above top of</p> <p>Page 1</p>	<p>plates. This should be done <u>before</u> a charge.</p> <p><b>CHARGING</b> <i>Kind of Current</i> <i>Polarity</i> <i>Ventilation</i> <i>Charging Rates</i> <i>Wide Range of Rates</i> <i>Usual Rates</i></p> <p>Use only direct current (never alternating current) for charging; if only alternating is available, apparatus must be procured to change it to direct.</p> <p>The positive terminal of the battery <u>must</u> be connected to the positive wire of the charging circuit.</p> <p>Open the battery compartment; ventilation on charge is necessary.</p> <p>The charge for any of the batteries of the "Exide" family may be started at <u>any</u> available rate of current within the capacity of the charging apparatus, wiring and connections. The only limitations of the charging rate, at any period of the charge, are the gassing of the cells and the temperature of the electrolyte.</p> <p>Stamped on the name plate of the battery are two charging rates, the lower of which is the "finishing rate." The higher figure is only given as being, under usual conditions, a sat-</p> <p>Page 2</p>	<p>isfactory rate at which the greater part of the charge may be given.</p> <p><b>Gassing</b> <i>Reducing the Rate</i> <i>Finishing Rate</i> <i>High Temperature</i> <i>Quick Charging</i> <b>OVER-CHARGE</b> <i>Overcharge Periodically</i> <b>AMPERE HOUR METER</b></p> <p>Whenever the cells begin to give off gas, lower the rate; when the current has been reduced in one or more steps to the "finishing rate" given on the name plate, continue at this rate until all the cells in the battery are gassing uniformly. If at any time during the charge the temperature of the electrolyte reaches 110° F., the rate must be reduced or the charge temporarily stopped. A full or partial charge can, in case of necessity, be given the battery in a very short time by starting the charge at a high rate. <u>Particular</u> care must be taken to reduce the rate whenever gassing begins.</p> <p>Once each week, and immediately after the battery has received its regular charge, give it an overcharge of not less than three hours at one-half the "finishing rate."</p> <p>An ampere hour meter, when used, should be set or adjusted to give the battery the amount of charge</p> <p>Page 3</p>
<p>necessary to produce the uniform gassing at the "finishing rate," which indicates the completion of a regular charge. This amount is usually from 10 to 15 per cent. in excess of the discharge. The weekly overcharge should be given irrespective of the ampere hour meter.</p> <p><b>HYDROMETER READINGS</b> <i>Pilot Cell</i></p> <p>Once a month and immediately after the regular overcharge check the condition of the battery by hydrometer readings. If the specific gravity of the electrolyte of any cell is higher than 1.300 or lower than 1.250, the cause should be promptly investigated and corrected.</p> <p>Since, during a discharge, the drop in specific gravity of the electrolyte is directly proportional to the amount of the discharge, one of the cells of the battery may be regularly used as a "pilot cell" for taking hydrometer readings, which are of value to indicate the state of charge or discharge of the battery at any time.</p> <p>Page 4</p>	<p><b>BATTERY IDLE</b> <b>LEAKING JAR</b> <b>PERIODICAL INSPECTION</b> <b>"Exide" INSPECTION SERVICE</b></p> <p>When a battery is to remain idle for a period of not to exceed four months, see that it is in good condition and give it an overcharge immediately before and after the idle period. If more than four months, send it to your battery man.</p> <p>If a jar develops a leak, have it replaced at once.</p> <p>Uniformly decreasing specific gravity throughout the battery (when not due to insufficient charging) indicates that sediment is accumulating in the bottom of the jars. An inspection should be made by a competent battery man when the specific gravity of the <u>fully charged</u> battery is below 1.250.</p> <p>In territories covered by The Electric Storage Battery Company's Service Department, the Company will be glad to have an inspector, on one of his periodical trips, make an inspection free of charge.</p> <p>If advice is desired, which cannot be obtained locally, write, giving full</p> <p>Page 5</p>	<p>particulars and especially <u>all</u> markings on the name plate on the battery trays, to</p> <p><b>THE ELECTRIC STORAGE BATTERY CO.</b> Allegheny Ave. and 19th St. Philadelphia, Pa.</p> <p><b>THE SERVICE ORGANIZATION OF</b> <b>THE ELECTRIC STORAGE BATTERY CO.</b></p> <p><b>SALES OFFICES</b> Philadelphia New York Boston Chicago St. Louis Cleveland Atlanta Denver Detroit San Francisco Seattle Los Angeles Portland, Ore. Toronto</p> <p><b>CONSTRUCTION DEPT. BRANCHES</b> Philadelphia New York Boston Chicago Cleveland San Francisco</p> <p><b>OPERATING DEPT. BRANCHES</b> Philadelphia New York Boston Chicago San Francisco</p> <p><b>"Exide" DEPOTS AND STORE ROOMS</b> New York Boston Chicago St. Louis Cleveland Atlanta Denver Kansas City San Francisco</p> <p><b>"Exide" INSPECTION DEPARTMENT</b> <b>DISTRICT HEADQUARTERS</b> Boston Philadelphia Cleveland Chicago San Francisco</p> <p><b>"Exide" INSPECTORS</b> Boston Rochester New York Philadelphia Atlanta Cincinnati Cleveland Detroit Chicago St. Louis Milwaukee Kansas City Denver San Francisco</p> <p>863 "Exide" Distributors</p> <p>Page 6</p>

## THE ELECTRIC STORAGE BATTERY CO.

MANUFACTURER OF

The "Chloride Accumulator", The "Tudor Accumulator"

The "Exide", "Hycap-Exide", "Thin-Exide" and "Ironclad-Exide" Batteries

New York Boston Chicago  
St. Louis Cleveland Atlanta Detroit

PHILADELPHIA, PA.  
1886-1913

Denver San Francisco Seattle  
Los Angeles Portland, Ore. Toronto





## G. V. ELECTRIC TRUCKS AT THE NEW YORK SHOW

The General Vehicle Company, Inc., will have the largest space (A 38), and the largest exhibit in the Grand Central Palace section of the New York Auto Show, January 20th to 25th inclusive, and will exhibit the following.

**1000 lb. Wagon, Zampieri Brothers, Bakers**

**2000 " " Otto Stahl, Butcher**

**2000 " Industrial Truck**

**2-ton truck, Wells Fargo Express Co.**

**2-ton G. V. Chassis**

**3½-ton truck, Beadleston & Woerz, Brewers**  
(Panel side bottle truck)

**5-ton truck, Jacob Ruppert, Brewer**  
(Screen side bottle truck)

**5-ton truck, Jacob Ruppert, Brewer**  
(Low seat keg type)

These machines are all regular trucks and wagons going through the factory, but behind each one there is an interesting story.

Zampieri Brothers' little wagon represents a **horseless delivery system** for bakers. (All horses sold in 11 months, and 4 G. V. Wagons substituted.) Otto Stahl has ordered 3 G. V's. in a year. The Wells Fargo Truck is something different in body lines and so is the Ruppert screen body truck.

Don't fail to see the G. V. Exhibit.

Catalogue 84 on request

### THE GENERAL VEHICLE COMPANY, Inc.

**Principal Office and Factory: LONG ISLAND CITY, NEW YORK**

NEW YORK CHICAGO BOSTON PHILADELPHIA ST. LOUIS MINNEAPOLIS CINCINNATI

# DON'T FAIL *to* SEE EXHIBITS *of* ELECTRIC VEHICLES *at* NEW YORK 1913 AUTOMOBILE SHOW

## New Grand Central Palace

Manufacturers of Electric Vehicles Exhibiting

*January 11-18*  
*Pleasure Vehicles Only*

SPACE No.

- 655 Buffalo Electric Vehicle Company
- 658 Columbus Buggy Company  
Exhibiting Columbus-Electric Brougham (model 1234)  
Columbus-Electric Coupe (model 1230)
- 692 The Standard Electric Car Company
- 693 Studebaker Corporation
- 665 Flanders Manufacturing Company

*January 20-25*  
*Commercial Vehicles Only*

SPACE No.

- 860 Baker Electric Vehicle Company
- 865 Buffalo Electric Vehicle Company
- 870 General Motors Truck Company  
Exhibiting 1 Model 1E, with panel body  
1 Model 2B, chassis only  
1 Model 6B, chassis only  
1 Model 10A, with brewery body
- 871 General Vehicle Company
- 876 The Lansden Company
- 881 M. & P. Electric Vehicle Company  
Exhibiting M. & P. Standard Panel Body Electric  
M. & P. Chassis
- 916 Studebaker Corporation
- 919 Ward Vehicle Company  
Exhibiting chassis of 1/2, 1, 4 and 5-ton Electric Trucks
- 920 The Waverley Company  
Exhibiting Waverley 1,000 lb. Electric Wagon  
Waverley 2-ton Electric Truck  
Waverley 5-ton Electric Truck
- 924 The Standard Motor Truck Company



*Public interest and private advantage both favor the Electric*

## ELECTRIC VEHICLE ASSOCIATION OF AMERICA

BOSTON

124 W. 42nd STREET, NEW YORK

CHICAGO

(54)

# SIMPLE CERTAIN RELIABLE ATLANTIC Electric Trucks

The Atlantic Truck is justly entitled to the Appellation  
**"The Long-Distance Electric Truck"**

¶ The amount of electricity stored in a Storage Battery is a fixed quantity. Consequently, that Truck which uses the least quantity of electricity in going one mile, will travel more miles per day than any other Truck using such fixed quantity of power.

¶ The reason why the Atlantic meets this requirement is because the best engineering talent in the United States was employed to design it.

**Built in four capacities — 1, 2, 3½ and 5 tons.**

Our Engineering Department will help solve your transportation problems.



## ATLANTIC VEHICLE COMPANY

1600 BROADWAY  
NEW YORK CITY

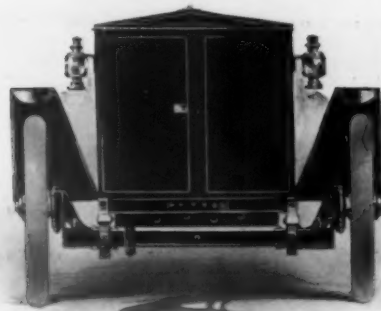
10 POST OFFICE SQUARE  
BOSTON, MASS.

FACTORY  
NEWARK, N.J.



When Writing, Please Say—"Saw Your Ad. in the C C J"





# Announcement

THE LIGHT COMMERCIAL CAR COMPANY ANNOUNCE THE LIGHT COMMERCIAL CAR ON THE MARKET, WEDNESDAY, JANUARY FIRST, NINETEEN HUNDRED THIRTEEN, AT MARIETTA, PENNSYLVANIA, AND CORDIALLY INVITE YOUR EXAMINATION AND INSPECTION OF THE MERITS OF THEIR CAR AND VERIFY THE FACTS.

THAT IT IS THE *FIRST* AND *ONLY* REALLY ONE HUNDRED PER CENT EFFICIENCY COMMERCIAL SERVICE CAR EVER PRODUCED;

THAT IT IS THE ONLY CAR FOR EIGHTY-FIVE PER CENT OF ALL LOCAL DELIVERY BUSINESS IN THE WORLD; AND

THAT HAVING BEEN DEVELOPED BY A DELIVERY SERVICE COMPANY FOR THE ATTAINMENT OF IDEAL AND PERFECTLY EFFICIENT SERVICE CONDITIONS AS THE DELIVERY SERVICE COMPANY UNDERSTOOD THEM, *IT* IS THE SIMPLEST, MOST PERFECT, DURABLE, ECONOMICAL, EFFICIENT, SALEABLE, ATTRACTIVE AND NEEDED MOTOR CAR FOR LOCAL TRANSPORTATION EVER CONCEIVED.

## SPECIFICATIONS

Weight: 450 pounds.  
Capacity: 600 to 800 pounds—up all hills.  
Speeds: (2) up to 35 miles per hour on high; up to 8 miles per hour on low.  
Mileage: 50 miles to gallon of gasoline.  
Lubricant: Self-acting.  
Tires: 26 x 3, Heavy Automobile.  
Transmission: Roller friction.  
Motor: 6 H. P., Single cylinder; air cooled; valveless.  
Wheel Base: 40" x 66".  
Van: 44" x 28" x 26". This will be made, however, to suit the requirements of the customer, plus whatever difference the cost might be.

PRICE, \$450.00.

# NO

gears to break.  
belts to wear.  
chains to tear.  
oil to forget, or go wrong, consequently damaging motor.  
oil or grease cups to need constant attention, and to forget, thus damaging moving parts of the car, without which the car is useless.  
OILING AT ALL.  
clutch to oil, reline, tighten or slip.  
clutch springs to weaken or break.  
universal joints.  
complicated differential gears to oil, wear and break.  
valves to grind and replace and need constant attention.  
cams, cam shafts, gears, springs, pins in motor.  
shafts to break or bearings to be kept well oiled.

ONLY THREE REVOLVING PARTS

**LIGHT COMMERCIAL CAR CO.**  
**MARIETTA, PENNSYLVANIA**



When Writing, Please Say—"Saw Your Ad. in the C C J"



## B. A. Gramm's Trucks

The name B. A. Gramm is known, and well known, wherever motor trucks are used, as representative of motor truck satisfaction. It is a name which has stood for progress, and now it has been applied to NEW DESIGNS which offer values and improvements far beyond all others.

## A New Standard in Trucks

**B. A. Gramm's Trucks** are built to do your work, and to do it well. They are not an experiment. They are built by people who know from actual experience just what is necessary in a truck, so that it will be able to give the required service. Designed in every detail to insure satisfactory and permanent results.

Long stroke powerful motor; Dry Plate Multiple Disc Clutch; Dog Clutch Type Transmission, doing away with the stripping of gears. Large Tires; Long Swinging Springs, guaranteed for the life of the truck; Electric Self Starter; entire power unit suspended on spiral springs, taking up all shock. Best material; Best Workmanship — *Up-to-the-Minute Trucks* in every sense of the word.

Write us and we will send you photographs, descriptive literature, and will tell you about the many advantages of "*The World's Best Trucks*" and of the *remarkable values we offer you.*

## The Gramm-Bernstein Company

Exclusive Motor Truck Builders

Lima, Ohio

New York Show  
Space 25 A  
Main Floor Grand  
Central Palace

Chicago Show  
Section G  
First Regiment  
Armory



## Buy Only Batteries with Good Service Records

¶ The good or bad in any vehicle battery usually does not show up until after you have paid your money, hence, actual past performances are a splendid guide in selecting. Here's one record typical of Gould Storage Battery performance and a sample of evidence such as our representatives can always submit to prospective customers:

"I have just completed 6,900 miles with the Gould Battery placed in my car by Capitol Hill Garage, in July, 1911. The battery has not been touched or cleaned during that period, and has given satisfaction in every respect. I consider this excellent as my car has now been in use four years."

W. DOUGLAS, Denver, Colo.

¶ Any battery that proves short-lived, of short service radius per charge, or needs frequent attention, can't be made really satisfactory on any terms, so careful selection is decidedly important.

¶ Give us the opportunity and we will demonstrate that the Gould Storage Battery delivers most power per charge, per year, and per dollar of annual battery expenditure, and while doing so, practically takes care of itself. Write for literature.

**Gould Storage Battery Co.**

General Offices: 341 Fifth Ave., New York

Boston: 89 State Street. San Francisco: 904 Rialto Bldg.  
Chicago: The Rookery. Cleveland: American Trust Bldg.

WORKS: Depew, N. Y.

Agents in Washington, Kansas City, Denver, Detroit, Topeka,  
Los Angeles, Seattle, Montreal and Toronto.

Full stock carried in all cities where we have offices or agents.



The Ward Broad Co. of New York has 100 Electric Delivery Wagons Equipped with Westinghouse Motors

Users of large fleets of  
Electric Commercial  
Cars Specify

## Westinghouse Vehicle Motors

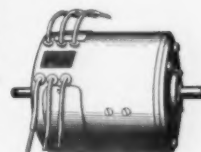
because of their **proven** reliability and efficiency.

From the time the electric vehicle was first a commercial success Westinghouse motors

have maintained a continuous record of satisfactory performance under all conditions of vehicle service.

This excellence is due mainly to two causes: First, the Westinghouse Company never places electric vehicle equipment on the market until exhaustive service tests have proved it to be better than the operating conditions require. Secondly, the Westinghouse Company co-operates with vehicle manufacturers and aids them in selecting electrical equipment to produce the most serviceable and efficient cars.

A list of vehicle manufacturers supplying Westinghouse equipment will be furnished on request



**Westinghouse Electric & Manufacturing Company**

Sales Offices in Forty-five  
Cities

East Pittsburgh, Pa.

## THE W. F. STEWART CO.

ESTABLISHED 1881 INCORPORATED 1898

FLINT, MICHIGAN

## WE BUILD BODIES

for both pleasure and commercial vehicles, and can give you goods and service that can be depended on. The price, too, will be right. Get in touch with us.

## THE KINSEY MANUFACTURING CO.

TOLEDO, OHIO

*Manufacturers of Auto Parts—*

**Kinwood Radiators, Fenders**

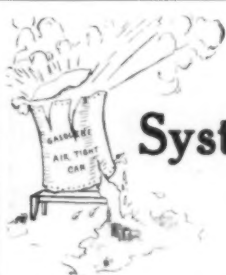
**Kinwood Oilers, Gaskets**

**Kinwood Steel Frames, etc., etc.**

**SPECIAL METAL STAMPINGS**

When Writing, Please Say—"Saw Your Ad. in the C C J"





## Why Bowser Systems Are Safe

Ordinary gasoline boils at 113° F. It throws off power-producing vapor long before it reaches the boiling point and it gets warm enough any day to produce vapor.

That vapor is P-O-W-E-R. To release it requires but a spark. Gasoline stored above ground is subjected to the fluctuating changes in temperature—10° to 20° F. every twenty-four hours—and it is, therefore, constantly throwing off power-producing vapor.

Store this inflammable liquid underground in a

### Bowser Safe Oil-Storage System

Nature's way—where the temperature hovers close around 57° all the year. It does not matter whether it is "zero" or hot enough to melt the pump, it will not explode.

Over a million satisfied users in twenty-eight years and not a fire traceable, directly or indirectly, to the use of Bowser equipment—they simply cannot explode, because they are built to conform to that measure of safety prescribed by the National Board of Fire Underwriters.

When in the market remember the name "Bowser." Send for illustrated booklet, showing some exceptionally severe fire tests. It will interest you. Free for the asking.

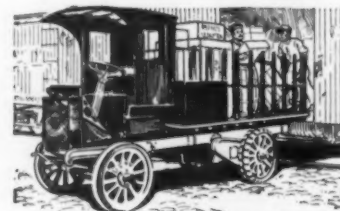
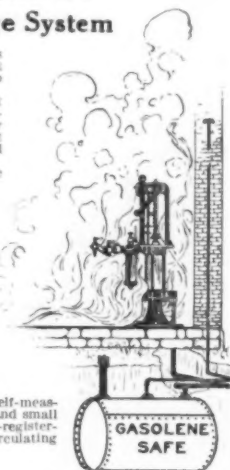
**S. F. BOWSER & CO., Inc.**

Home Plant and General Offices:  
Box 2118, Ft. Wayne, Ind.

ATLANTA	ST. LOUIS
279 Peachtree St.	1199 Olive St.
MINNEAPOLIS	DENVER
1162 Hennepin Av.	1008 G. & E. Bldg.
CHICAGO	SAN FRANCISCO
268 Fisher Bldg.	670 Howard St.
NEW YORK	TORONTO
108 Church St.	Box A B F
DALLAS, 267 Lane St.	

Patentees and manufacturers of standard, self-measuring, hand and power-driven pumps, large and small tanks, gasoline and oil-storage systems, self-registering pipe-line measures, oil-filtration and circulating systems, dry-cleaner's systems, etc.

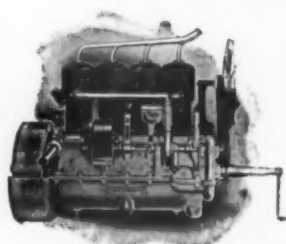
ESTABLISHED 1885



## Truck Satisfaction

depends upon the performance of the motor. For heavy traffic or light, high speed or low,

# THE RUTENBER MOTOR



is the most dependable. Simple in construction, silent, powerful and speedy, the RUTENBER is the most economical and efficient engine for commercial cars. It is found in half a dozen of the best trucks on the market today. It should be in yours. Write for booklet.

The Rutember Motor Co., Marion, Ind.

## The Eureka Non Skid for Dual Tires

Gives traction in any place where the wheels of the truck can be turned.

Does **NOT** injure the tires.

Don't let the weather tie up your delivery service, have a pair of **Eureka Non Skids** in every truck for an emergency.

### Prices:

For tires 36 inches or under  
\$25.00 per pair

For tires over 36 inches  
\$30.00 per pair

**EUREKA NON SKID MFG. CO.**  
591 BERGEN ST. BROOKLYN, N. Y.



## We Ship on Approval

prepay freight and allow

## 30 DAYS FREE TRIAL

The best "Nonskid" puncture-proof device on earth for automobiles and motorcycles.

Try them at our expense. Be your own judge—don't take anyone's word for it. "The proof of the pudding is in the eating."

## It Only Costs One Cent

to learn our unheard of prices and marvelous guarantee on "Brixtson" Detachable Treads.

Write today for full particulars

**The Brixtson Mfg. Company**  
4513 BRIXTSON BLDG. BROOKINGS, S. D.



# TRAVELOG



Is your truck investment paying you?  
You have invested your good money in truck equipment and it is up to you to see that it is making good.

There is only one way of knowing.  
The TRAVELOG registers its every move. It tells you how many stops were made, the duration of each stop and the time length of each run.

See that your truck is kept moving and make that investment earn money for you.

Write at once for details

**W. H. BROWN, ROSE BLDG., CLEVELAND, OHIO**

# LALLY



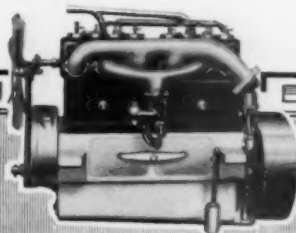
LALLY PATENTED DUMPING BODIES will increase the efficiency of your truck 100%. They cut down the loading and unloading time and require only one man to handle them. We have special designed bodies for handling every known product. We have been making special bodies for all kinds of vehicles for the last thirty years. Our experience is at your service.

Write us about your requirements

**LALLY COMMERCIAL BODY COMPANY**  
21-23 West First Street South Boston, Mass.

# BODIES

When Writing, Please Say—"Saw Your Ad. in the C C J"



## WAUKESHA

4 1/4 x 6 3/4 LONG STROKE TRUCK MOTOR.

**E**FFICIENCY is the Waukesha Motor's best eulogy. It is efficient because it is constructed to give the utmost in service.

The Waukesha crankshaft has a tensile strength of 70 tons. The bearings have three times the wearing quality of ordinary bearings. Both these metals are our own processes. The rest of the motor is on par with these two features. When we can prove all this why not ask us to?

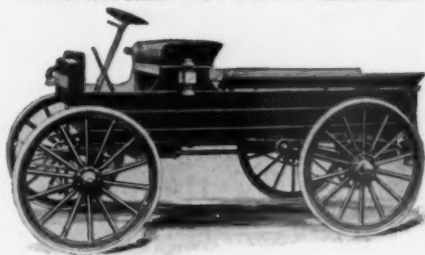
Why not learn that you can put a motor in your trucks that will exceed your broadest guarantee of efficiency, wear and economy of fuel? Your request will bring proof that will leave no doubt of the Waukesha Long-Stroke Motor's supremacy.

**WAUKESHA MOTOR CO.**  
WAUKESHA Dept. A. WISCONSIN

**AN EXCEPTIONAL MOTOR.**

## MERCURY 1,000 POUND TRUCKS

MANUFACTURED—NOT MERELY ASSEMBLED



**\$750.00**

F. O. B. CHICAGO

### DEALERS

HERE IS A CAR YOU CAN SELL AND KNOW IT WILL STAY SOLD, BECAUSE IT IS DESIGNED FOR COMMERCIAL WORK, IS BUILT RIGHT, SATISFIES THE PURCHASER AND COSTS LESS TO MAINTAIN THAN ANYTHING ELSE ON WHEELS.

WE CARRY FOUR DIFFERENT STYLE BODIES.

INVESTIGATE OUR AGENCY PROPOSITION BEFORE CLOSING CONTRACT FOR 1913.

**The Mercury Manufacturing Company**  
4106 S. Halsted Street, Chicago, Illinois



Decatur Hoosier Limited  
1 1/2 Ton Truck  
"Made in Grand Rapids"

## Decatur 1 1/2 Ton Truck

The Truck with a reputation for  
**Economy Efficiency Durability**  
and Low Operating Cost

Our Trucks are used in 61 different lines of business.  
Write for catalog and complete specifications telling  
**WHY DECATUR TRUCKS ARE BEST.**

**GRAND RAPIDS MOTOR TRUCK CO., GRAND RAPIDS, MICHIGAN**



## BUCKEYE Motor Truck Jacks

Buckeye Motor Truck Jacks are safe, reliable and made to stand the wear and tear for which they are intended. They are fully guaranteed, and cannot possibly drop with a load. They are made from Steel Drop Forgings, best finish and workmanship throughout.

Get our prices before you place your orders for jacks, we can save you money.

No.	Height Bar Down	Raise of Bar	Height Bar Up	Weight	Capacity	List Price
7	11 1/4"	6 1/8"	18"	16 lbs.	2 1/8 tons	\$10.00
13	14 1/4"	7 1/8"	20 1/8"	26 1/8 "	3 "	15.00
14	14 1/4"	7 1/8"	20 1/8"	33 "	5 "	16.00
9	11 1/8"	6 "	17 1/8"	10 "	1 1/2 "	6.00

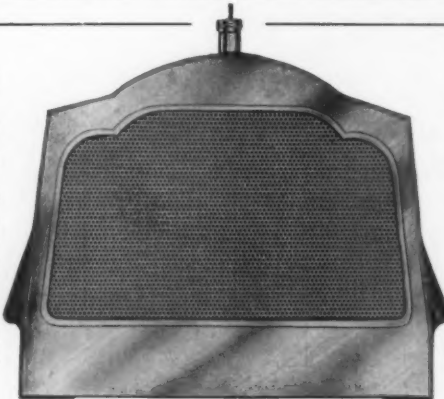
Write today for descriptive catalog. Made only by

**THE BUCKEYE JACK MFG. CO., Alliance, Ohio**



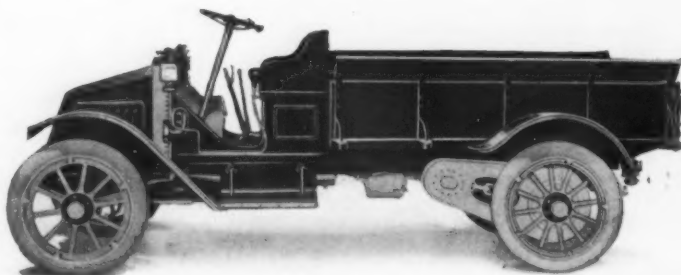
## FEDDERS Real Square Tube Radiators

Commercial cars require radiators that will stand many shocks and much hard usage. This was one of the weak parts of the commercial car but the test of time has proved that FEDDERS radiators render efficient service.



¶ We want to figure with you your requirements for the coming season. If you haven't used Fedders radiators you probably have had a great deal of radiator trouble and you may think that there isn't a radiator built that will give you satisfaction. If this is the case we would like to have an opportunity of demonstrating that the Fedders radiator will stand the wear and tear and shocks of the commercial car and that manufacturers who equip their commercial cars with the Fedders have practically no radiator trouble. We can convince you. Will you give us the opportunity?

**FEDDERS MFG. WORKS**  
BUFFALO :: NEW YORK



**"Sandusky" Model "B" 1500 lb. Delivery Truck**

Long stroke, 4-cylinder motor, 30 H. P.  
Selective sliding gear transmission.  
120 inch wheelbase.  
Double chain drive.  
Chains enclosed in aluminum cases.  
Center control, left-hand steering.

### PRICES:

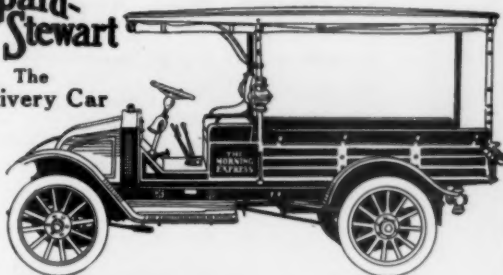
Chassis	-	\$1400.00
Chassis with Express Body	-	1475.00
Chassis with Covered Delivery Body	-	1500.00

**DEALERS:**—Write for agency proposition. Do it now. It is the best buy in the world today.

**Sandusky Auto Parts & Motor Truck Co.**  
Sandusky, Ohio, U. S. A.



**Lippard-Stewart**  
The  
Delivery Car



### Lippard-Stewart Cars Guarantee Prompt, Efficient and Economical Delivery

Lippard-Stewart Delivery Cars give service because they are built to give it. They assure quick and dependable delivery over a wide territory at the minimum cost per package, because they are constructed by engineers who know and have fulfilled every requirement demanded of a thoroughly efficient delivery vehicle.

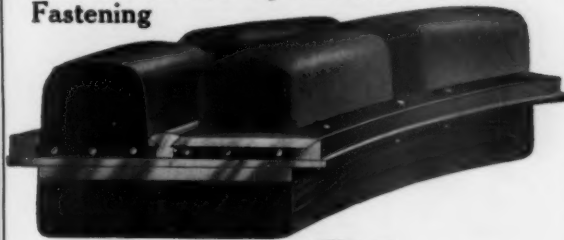
#### Read These Special Features of Lippard-Stewart Construction

Continental 30 H. P. Motor Timken Roller Bearings Throughout  
Eisemann Magneto Special Spring Suspension  
Brown-Lipe Selective Transmission Left-hand Drive  
Cone Clutch Every Part Easy of Access  
Full Floating Timken Rear Axle Tires—35 x 4½ Front and Rear

**Lippard-Stewart Motor Car Co., Buffalo, N. Y.**

August Becker, Pres. E. J. Barcalo, Treas. J. C. Millar, Sec'y  
C. S. Dahlquist, Chief Eng. W. F. Reynolds, Sales Mgr.

Each Block Held by Its Own  
Fastening



**GOODYEAR**  
AKRON, OHIO

### Individual Block Tires For Heavy Trucks

The distinguishing feature of this great and successful truck tire is the absolute independence of each block.

Unlike other types of block tires, each block is held firmly in place by its own individual fastening. No bothering with several blocks when only one needs attention.

Thus time is saved, and a perfect adjustment of each block is made possible. And this perfect adjustment means less wear—greater serviceability.

A wonderful tire for heavy use or where non-skid efficiency and great traction is required on rear wheels.

#### 6 IN ALL

Besides this we make 5 other truck tires—3 for heavy trucks, 2 for light high-speed commercial. One is sure to suit your requirements. Write for our folder.

**The Goodyear Tire & Rubber Co., Akron, Ohio**

Branches and Agencies in 103 Principal Cities

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits

## THE JONES RECORDER

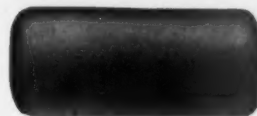
Leaves Nothing  
to the  
Imagination



You don't have to guess what your truck is really doing—you **know**. Every move, every stop, the speed, distance traveled—everything to enable you to keep a systematic record is on the JONES Recorder chart. Absolutely essential to put your business on a modern, up-to-date basis.

### THE JONES SPEEDOMETER

Bush Terminal, Brooklyn, New York  
Broadway and 76th Street New York City



One-Shell Type Without Band

## Seamless Steel Tanks

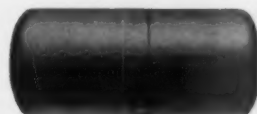
for GASOLINE and AIR UNDER PRESSURE in connection with Air Starter Equipments and Forced Gasoline Feed on Pleasure and Commercial Cars

### All Sizes and Styles (in cylindrical shapes)

Light in weight, attractive in appearance, safer than welded or riveted containers of twice their weight. Send us your specifications.

We Are Manufacturers, Not Jobbers

**Federal Pressed Steel Co.**  
MILWAUKEE, WIS.



Two-Shell Banded Type

*The Momentum of a Heavy Commercial Car Makes a Sure, Prompt and Efficient Signal Absolutely Necessary*

## JERICH0 THE PERFECT MOTOR CAR SIGNAL

Jericho is everywhere regarded as standard equipment for commercial cars. It is dependable in every emergency.

For the delivery wagon, which is all day in the crowded streets, or the interurban express and moving vans going long distances over winding country roads, there is no horn that approaches Jericho.



THE JERICH0  
(One-Tone)

*Jericho always works promptly and costs nothing to maintain.*

Send for free booklet 5 about Jericho and other automobile accessories.

**The Randall-Faichney Company, Boston, Mass.**

*Also makers of Jubilee Horn, B-Line Guns, MacKae Blitz Spark Plugs and other Automobile Accessories.*



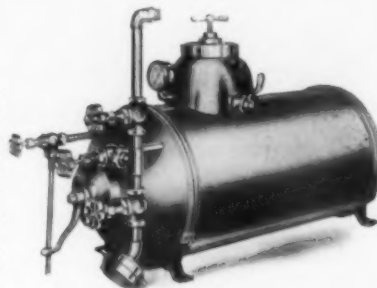
3-Gallon  
Approved  
Extinguisher

## Chemical Fire Apparatus

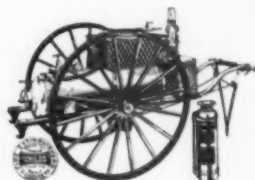
### HAND EXTINGUISHERS and TANKS

of every description for department apparatus. We are equipped to make tanks of any size or type.

We also provide a complete line of Chemical Engines, mounted on wheels for service in factories, towns, villages, etc. Hose Reels, Hose Axles, Ladders, Hooks, etc.



35-Gallon Copper Tank



We can equip any chassis complete with body, chemical apparatus, etc. **Ask us.**

**O. J. CHILDS CO.**

48 Liberty Street  
UTICA, N. Y.

## W. J. KELLS MFG. CO.

521-23-25 W. 45th Street, New York



**The Only GUARANTEED RADIATOR  
for COMMERCIAL CARS**

In case of ACCIDENTAL DAMAGE, RADIATORS to LOAN while we are REPAIRING yours.

Giving satisfaction on the Hewitt, Reliance, Frontenac, Saurer, American Eagle, Mack, Knox and Croce.

### Study this Modern



### Truck Axle

## Torbensen

## Axles

The Torbensen has a solid drop forged dead I-Beam as a *one piece load-carrying* member—a great range of gear reduction—highest efficiency, strength and durability—perfect protection to working parts and gear—low cost of up-keep—quietness in operation. The superiority of Torbensen Internal Gear drive

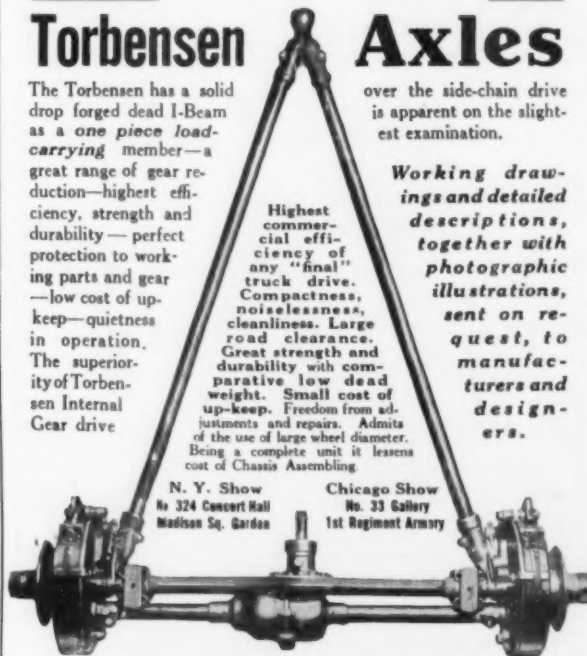
over the side-chain drive is apparent on the slightest examination.

*Working drawings and detailed descriptions, together with photographic illustrations, sent on request, to manufacturers and designers.*

Highest commercial efficiency of any "final" truck drive. Compactness, noiselessness, cleanliness. Large road clearance. Great strength and durability with comparative low dead weight. Small cost of up-keep. Freedom from adjustments and repairs. Admits of the use of large wheel diameter. Being a complete unit it lessens cost of Chassis Assembling.

N. Y. Show  
No. 324 Concert Hall  
Madison Sq. Garden

Chicago Show  
No. 33 Gallery  
1st Regiment Armory



**Torbensen Gear and Axle Co.**

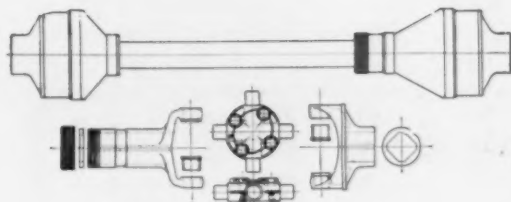
Formerly Bloomfield, N. J.

223 High Street, NEWARK, N. J.



And you must not forget that the more we build—the better we build them. Ford value today is infinitely greater than it was when the volume was smaller—and price higher. The demand is big. Don't miss your chance—order today.

Every third car is a Ford. Nearly 180,000 have been sold and delivered. New prices—run-about \$525—touring car \$600—delivery car \$625—town car \$800—with all equipment, f. o. b. Detroit. Get particulars from Ford Motor Company, Detroit, Mich.



## P-30 Drive

We supply single universals or drive shafts complete as shown. Forgings are special analysis steel, heat treated, machine work accurately done. Note extreme simplicity of design, insuring long life.

**The Otto Konigsloew Mfg. Co.**

**CLEVELAND**

Sixth City

Sales Agents: THE ZINKE CO., Chicago

## Motor Truck Bands

MADE WITHIN THE FOLLOWING

### Dimensional Tolerances

(ADOPTED BY THE SOCIETY OF AUTOMOBILE ENG.)

**1.—Tolerance in circumference of felloe band:**

	Plus	Minus
Before application to wheel - - -	1-32"	1-32"
After " " " " - - -	1-16"	1-32"

Variation from precise measurement shall be uniform over entire width of band.

**2.—Tolerance in width of felloe band:**

	Plus	Minus
Up to and including 4" - - -	1-32"	1-32"
4—1-16" to 6" - - -	3-64"	3-64"
6—1-16" to 12" - - -	1-16"	1-16"

**3.—Variation in trueness of band when placed on surface plate:** Band shall touch at all points within 1-32" up to and including 6" width. Over 6" width within 1-16".

**4.—Variation in thickness of band:** .006" plus or minus.

**5.—Trueness to round.** The radial tolerance on the wheel when felloe band is applied shall be 1-16" plus or minus. This plus or minus tolerance must not occur at diametrically opposite points. There shall be no flat spots or kinks in felloe band on the finished wheel.

**The Standard Welding Company**

**CLEVELAND**

**NEW YORK**

**CHICAGO**

**DETROIT**

## THE HAZARD MOTOR MANUFACTURING CO.,

which has confined its efforts in the past to the Hazard line of motors, announces the bringing out of a new line of motors, known as the

## ERGON MOTORS

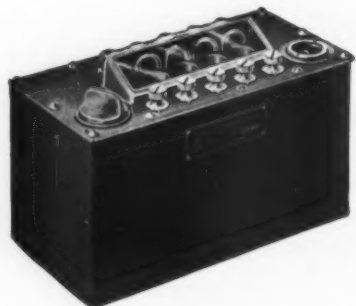
The new motors are 4 cylinder, 4 cycle, water-cooled "L" head type, 4 3/8" bore and 6" stroke.

Ergon motors are so designed as to accommodate several standard makes of electric and pneumatic starters.

**THE HAZARD MOTOR MFG.CO.**

**ROCHESTER, NEW YORK**





## Detroit Oilers have no ball checks

There are no check valves or other complicated parts in Detroit Mechanical Force Feed Oilers to give trouble and cause failures. Every drop of oil **must** go to the place where it is needed.

A separate pump for each feed measures the oil and insures a rate of feed that is **exactly** right at all times. Once properly regulated there is no chance for faulty lubrication and dry bearings, carbonized cylinders, smoke at the exhaust and wasted oil are entirely eliminated.

Detroit Oilers are made with from one to thirty feeds in capacities of two pints to five gallons—pulley, sprocket, ratchet or gear drive.

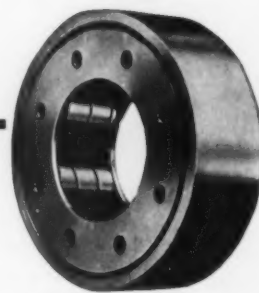
Made also with two compartments for feeding one kind of oil to cylinders and another to the bearings.

Write today for catalog P-67 and full information.

### DETROIT LUBRICATOR COMPANY.

DETROIT, U. S. A.

Largest Manufacturers of Lubricating Devices in the World.



## FLEXIBILITY SAVES THE GEARS

SHOCK LOADS IN MOTOR CARS are enormous. Even ordinary speeds on average roads produce vibrations which would make any riding impossible without the use of springs, absorbers, etc.

NO PRINCIPAL MEMBER of the motor car even approaches a condition of absolute rigidity. An automobile bearing, then, whose successful operation depends upon accurate alignment of frame and shafts cannot give its best service under these conditions.

MIGHTY LITTLE FLEXIBILITY is in a solid ball or roller. The one bearing in which it really exists is the Hyatt. There the spiral rolls carry gears in accurate mesh under service conditions, at the same time cushioning shocks and relieving surrounding parts of excessive strains and stress.

### Hyatt Roller Bearing Company

DETROIT, MICHIGAN

**TRANSMISSION JACK SHAFTS  
WHEEL BRAKES  
BRAKE DRUMS  
AND  
SPROCKETS.**

**DIFFERENTIALS  
AND  
PLANETARY  
TRANSMISSION  
GEARS**

**THIS IS OUTFIT NO. 358  
SUITABLE FOR 1 TO 2 TON TRUCKS &  
20 TO 40 HORSE POWER  
SAMPLE OUTFIT FOR \$145.00**

**WITH SLIDING GEAR TRANSMISSION  
THREE SPEED FORWARD ONE REVERSE  
40 TO 60 HORSE POWER  
SAMPLE OUTFIT FOR \$225.00**

**HEAVY BUILT  
SLIDING GEAR  
TRANSMISSIONS  
3 SPEEDS FORWARD.  
ONE REVERSE  
FOR 20 TO 60  
HORSE POWER. FOR  
TRUCKS CARRYING  
1 TO 4 TONS**

**MUNCIE GEAR WORKS, MUNCIE, IND.**

## FOR BRAKE TROUBLES APPLY



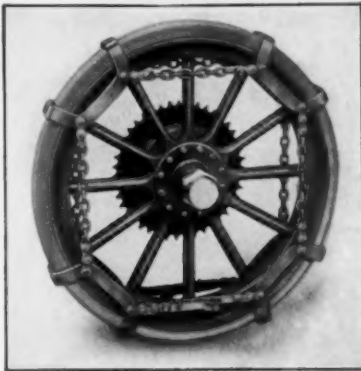
### DUPLEX EXTERNAL BRAKES

They have the largest braking surface. Act backward as well as forward. Slight pressure does the trick. Duplex brakes are the best the industry produces. For brake troubles, write us.

### The Royal Equipment Company

484 Housatonic Ave., Bridgeport, Conn.

We also make Raymond Brakes, Raybestos Friction Facing and Gyrex, the Mixer.



## BUYING RIGHT

Traction grips when purchased should be judged by exactly the same critical standard as is used to determine the value or merit of any other essential part entering into the construction of the motor truck.

It is not sufficient to purchase a grip for traction ALONE. There are several OTHER things, EQUALLY as important, that it is necessary a Traction Grip should have, if it is to perform its functions in an economical and satisfactory manner.

The actual value and merit of ANY Traction Grip may be CORRECTLY and IMPARTIALLY judged by four things, positively required in design and construction if it is to measure up to the highest possible standard.

First—Grip must NOT injure tires. (Guaranteed.)

Second—Grip must give EFFICIENT traction. (Guaranteed.)

Third—Grip must give CONTINUOUS satisfactory service. (Guaranteed.)

Fourth—Grip must be QUICK-ATTACHABLE. (Guaranteed.)

Each one of the requirements noted is of equal importance and absolutely necessary—deficiency in ANY one is at the expense of the buyer.

FEDERAL Grips are designed and made expressly for solid tires—the more severe the conditions, the greater their merit stands out.

FEDERAL Grips are time savers, being quick-attachable in every sense of the word. Jack or special tools not required in application of grips—your hands and two minutes are needed—that's all.

FEDERAL Grips fold up in a very compact form when not in use—they can be conveniently carried on the car, ready for any emergency.

FEDERAL Grips are made from NICKEL STEEL exclusively, the steel being heat-treated in the most approved manner, making it capable of withstanding more than the ordinary amount of accidental or customary hard usage.

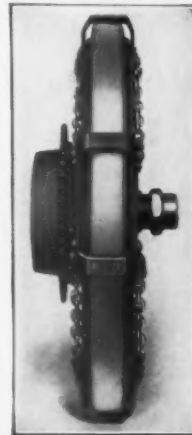
FEDERAL Grips will do the work—not injure the tires—and are mechanically perfect—our guarantee that goes with every set covers that.

"Points about Traction Grips and their selection" are covered in our catalog—YOUR copy is ready—it's free.

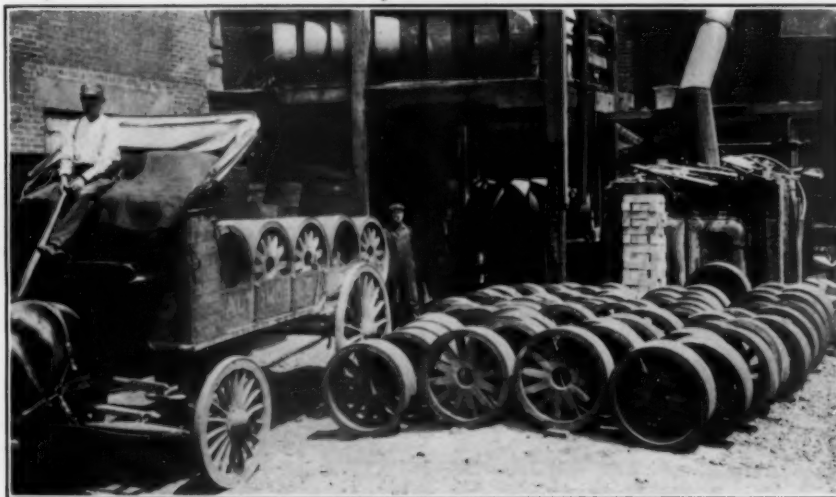
Federal Grips Are Made for Both Dual and Single Tires.  
We Also Make GAYLOR Emergency Grips for Solid Tires.

Exhibiting at  
NEW YORK  
CHICAGO  
BOSTON  
COMMERCIAL CAR  
SHOWS

**FEDERAL CHAIN & MFG. CO.**  
SPRINGFIELD, MASS.



**WE MAKE HEAVY TRUCK WHEELS AS WELL AS PLEASURE CAR WHEELS**



SHIPMENT OF 5-INCH DUAL TRUCK WHEELS MADE BY

**PHINEAS JONES & CO., 301-313 Market Street, Newark, N. J.**

Repairing and truing old wheels a specialty      Experimental wheels a specialty  
We furnish and apply any style demountable or detachable rim or tire

ESTABLISHED 1855

Branch Factory: Twelfth Avenue and 55th Street, New York City

When Writing, Please Say—"Saw Your Ad. in the C C J"

## STANDARD Adjustable Taper Roller Bearings



A superior grade Taper Roller Bearing for Commercial Truck service. The Cups and Cones of these Bearings are made from Becker steel tubing, subjected to a properly controlled heat treatment, which makes the steel homogeneous throughout the section.

There will be no flaking of the surface of the Cups and Cones as occurs with similar parts made from case-hardened carbon steel.

Made interchangeable with other Taper Roller Bearings, Double Row Ball Bearings and Annular Ball Bearings. The highest grade motor trucks are using these Bearings on account of the superior quality of the steel used in their construction.

**STANDARD ROLLER BEARING COMPANY, Philadelphia, Penna.**

**Why  
You  
Should  
Profit  
By  
Our  
Experience**

¶ We were pioneers in the manufacture of Chrome Vanadium Steels, hence can give you the benefit of longer and more varied experience.

¶ This company furnishes a large tonnage of Chrome Vanadium Steel used in the manufacture of automobile parts.

¶ We number among our customers the largest individual buyers of Vanadium Steel in the world.

¶ We have improved the quality of our Chrome Vanadium Steel to the highest stage of perfection yet attained.

¶ Our Chrome Vanadium Steel is made under our own secret process, patents for which are now pending.

*Drop us a line today*

**The United Steel Company**  
**CANTON, OHIO**

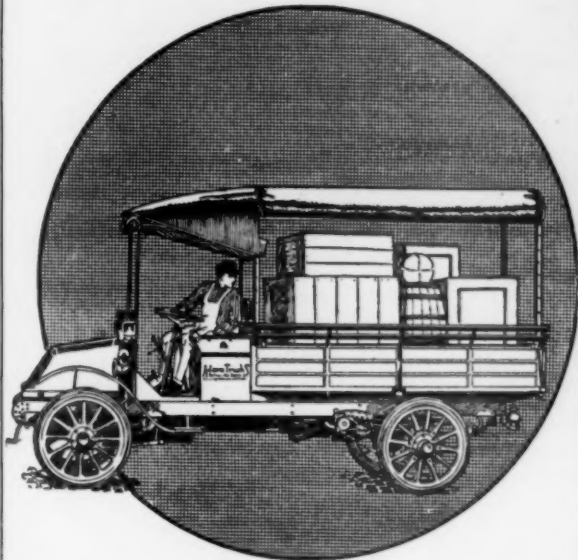
BRANCHES:—New York, Chicago, Detroit, Cincinnati, Ohio

When Writing, Please Say—"Saw Your Ad. in the C C J"



# Adams Trucks

"Deliver the Goods"



Adams Trucks are used in 85 different lines of trade.

Repeat orders from many large truck users, who have been operating from 2 to 25 trucks of different makes, demonstrate the superiority of the Adams.

One owner of a number of trucks writes: "In answer to your inquiry of the 11th inst. regarding Adams Trucks, I am pleased to say it has proven the best of the bunch—I have eight. I don't know of any truck, at any price, that can beat it."

A large New Orleans manufacturer using several other makes of trucks, but who several months ago installed an Adams, writes: "We have finally found a truck to answer all our requirements."

Another writes: "We have had quite some experience with motor delivery cars, the Adams being our third, and we very gladly say that the Adams is the best, most reliable, and cheapest to operate of any we have ever owned."

If you are not posted, why not write us direct and get acquainted with the Adams? "It delivers the goods."

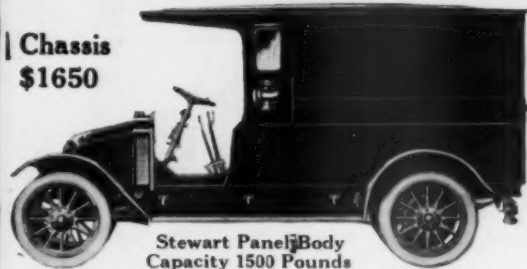
We will exhibit at the National Commercial Car Show, Chicago, February 10th to 15th, and we invite all Merchants, Manufacturers and Dealers to inspect this line of trucks.

**THE ADAMS BROS. CO., FINDLAY OHIO**

First American Truck Manufacturers to use the French Type Hood. (Radiator rear of the motor.)

## Stewart Delivery Trucks

Chassis  
\$1650



Stewart Panel Body  
Capacity 1500 Pounds

## Big Dealers Take Stewart Agency

Many of the most successful and progressive automobile dealers have taken the Stewart agency within the past 90 days.

They have been waiting years for the right delivery wagon to appear—one that is high grade in every particular, moderately priced, and built by a good company, amply financed and having facilities for prompt deliveries.

The department heads of the Stewart Motor Corporation are thoroughly experienced automobile men that know what dealers want and how to assist them. They have spent years in this business. They are the designers and builders of the first real scientifically designed delivery car placed upon the market. The Stewart 1500-lb. capacity delivery truck is a combination of all their wide experience.

Here are some of the leading dealers of America, selling Stewart delivery trucks:

Mandery Motor Car Co., Rochester, N. Y. (Packard Dealer)  
S. G. Chapman, big Hudson dealer, San Francisco, Cal.  
Alco-Pittsburgh Sales Co., Alco Dealer, Pittsburgh, Pa.  
Capital City Auto Co., Hartford, Conn.  
Votz Bros., Kelly Truck Dealers, Chicago, Ill.  
Borg & Wharry Motor Co., St. Paul, Minn.  
Henry E. Riker & Co., Cleveland, Ohio  
Stewart Auto Sales Co., Los Angeles, Cal.  
Coast Commercial Car Co., Portland, Ore.  
Savannah Motor Car Co., Savannah, Ga. (Cadillac Dealer)  
R. Stewart Beaver, Alco Agent, Baltimore, Md.  
Federal Truck Co., St. Louis, Mo.  
Crim-Bronner Auto Co., Utica, N. Y.  
Northrup Motor Service Co., Edmonton, Alberta (Packard Dealer)  
North Shore Motors & Service Co., Salem, Mass.  
Koons & Hallier, Wilkes-Barre, Pa.  
H. Ross Maddocks, Boston, Mass.  
Young & Dwire, Houston, Texas (Packard Dealer)  
David S. Hendrick, Washington, D. C. (Franklin Dealer)  
Albany Garage, Albany, N. Y.  
Allen Motor Co., Allentown, Pa. (Hudson Dealer)  
Medicine Hat Garage, Medicine Hat, Alberta  
Gomery-Schwarz Motor Car Co., Wilmington, Del. (Hudson Dealer)  
Claude M. Nanticuel, New York (Foreign Distributor).

### General Specifications of Stewart Trucks

30 H. P. Continental Motor, 3 $\frac{1}{2}$ " x 5 $\frac{1}{4}$ "; Multiple Disc Dry Plate Type Clutch, enclosed in dirt-tight casing; Brown-Lipe Selective Type Transmission, three speeds forward, one reverse, transmission shafts supported on Timken roller bearings; Timken Axles, front and rear; Timken Roller Bearings in all hubs; Rear Axle full floating type, 5 to 1 gear ratio; Bosch Magneto, single ignition; Firestone Demountable Rims; 35 x 4 $\frac{1}{2}$ " Tires, front and rear; Genuine Honeycomb Radiator. Every unit easily accessible and quickly removable. All parts absolutely interchangeable. Chassis Price, \$1650.

Now is the time for you to take on the agency for Stewart trucks. The field is just opening up, but merchants everywhere are looking for a car like the Stewart, one built for their needs, and designed to give the greatest economy, reliability and lasting service. Send for our catalog and dealers' proposition today.

**Stewart Motor Corporation**  
Buffalo, N. Y.

## A Word to Thinking Dealers

In building a **lasting** business,—one which will endure indefinitely, your local business reputation must be backed up with dependable goods. Your success depends largely upon the product you sell.

You cannot afford to sell your merchants a motor truck which does not possess lasting qualities.

The **DURABLE DAYTON** line of motor trucks (2, 3, and 5-ton models) rank exceptionally high in the industry. There are several makes of high-grade trucks on the market today—the **Durable Dayton** is **one of the several**.

We seek business connections with that class of dealer who has the honest desire to build his business similar to that of this company. A business of stability, reliability and conscientious dealing.

We are continually creating business for Durable Dayton Dealers with our national advertising campaign, sales co-operation and personal work in the field.

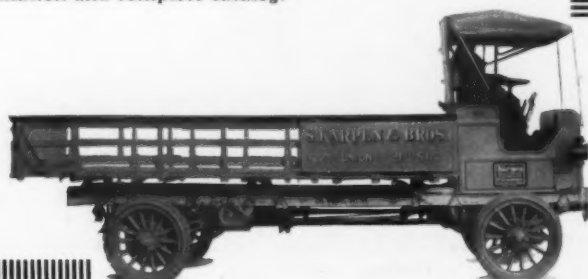
We are best known by the expressed satisfaction of Durable Dayton users throughout the country.

Write promptly for detailed information and complete catalog.

See our exhibit at Northwest Corner of Madison Ave. and 27th St.,  
directly across from the Madison Square Garden,  
during the New York Show.

**The Dayton Auto Truck Co.**  
DAYTON, OHIO

Factory Branch, 1700 Wabash Ave., Chicago



**SIMPLE  
ECONOMICAL  
EFFICIENT  
DURABLE**

### Model M Specifications

Motor—4½ x 5½, 40 H.P.  
En Bloc.  
Ignition—Briggs Dual  
"Guaranteed for Life."  
Double Spring-Suspended Radiator.  
Demountable Tires, Guaranteed 10,000 Miles.  
Gasoline Capacity—23 Gallons.  
Equipment—Two 12-inch Gas Lamps, 2 Bull's-Eye Side Lamps, Tail Lamp, Tools, Jack, Oil Can, Chain Links, etc.



Model M, 1½-Ton Capacity. Price, Chassis \$1675.00

*Service* MOTOR TRUCKS.

NEW YORK SHOW,  
Space 34 A, Grand  
Central Palace,  
January 20-25.

CHICAGO SHOW,  
Space P, Coliseum Annex, February 10-15.

### Transmission!

The Service **GEARLESS**  
Double Friction.  
No gears to strip.  
No clutch to slip.  
Unlimited speed changes to meet every road and load condition.

We build trucks and delivery wagons of the ¾-ton, 1-ton, 1½-ton and 3-ton capacities.

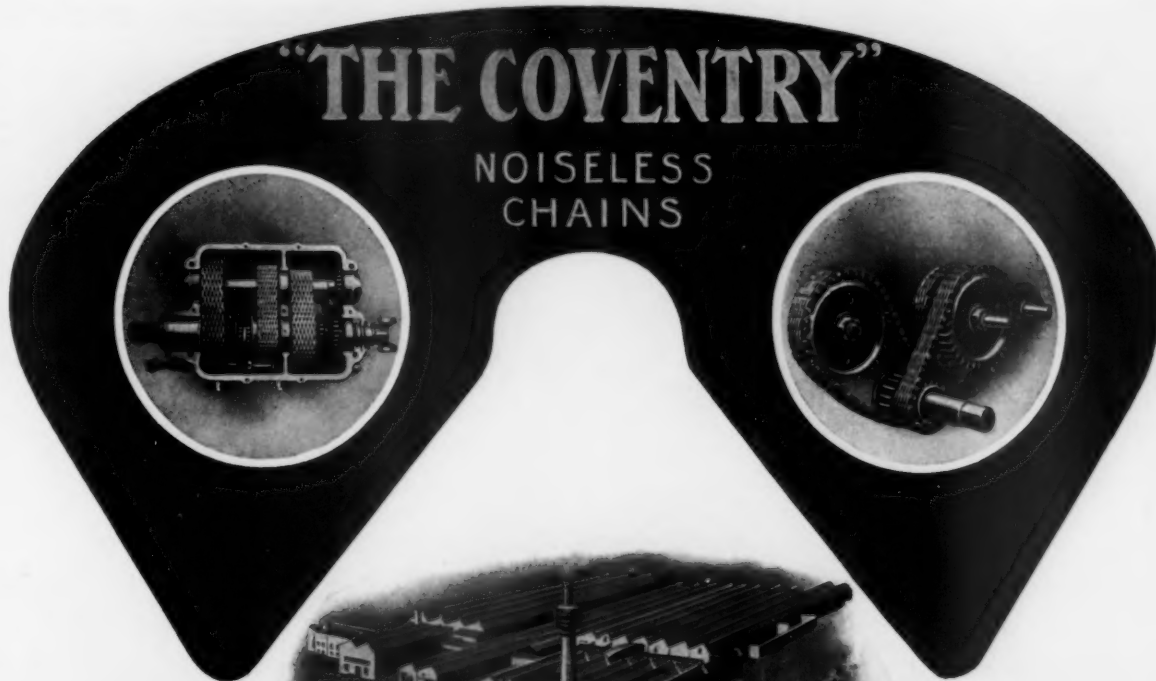
## MR. AUTOMOBILE DEALER

You need and want a commercial car line for 1913. We want you to have the Service line because it will **MAKE YOU MONEY, AND GIVE PERMANENT SATISFACTION TO YOUR CUSTOMERS.**

The Service trucks solve the driver problem; anybody can drive a truck with the Service Gearless, Double-Friction Transmission. Driver carelessness can't injure a Service Truck; for it has no gears to strip nor gear-cases to run dry. It will go anywhere because of its limitless speed changes. The line comprises trucks and bodies for every commercial purpose. Some good territory open for responsible agents only.

**SERVICE MOTOR CAR COMPANY, 28 Grant St., Wabash, Indiana**

When Writing, Please Say—"Saw Your Ad. in the C C J"



UNITED STATES REPRESENTATIVES  
**SARCO ENGINEERING COMPANY**  
 110 BROAD ST., NEW YORK

## Is Your Delivery System On the Up Grade?

If it isn't, the "Modern" will put it there. Your competitor may have ordered his delivery cars last week, planning to take a step in advance. Whether he did or not is beside the question—which is—you need the Modern—if you are going to put your delivery system on the up grade. Your greatest need is the utmost speed. It's the 20th Century cry. **Speedy delivery is vital to your business success.** Don't wait to be forced into line. Be a leader. It's the fellow that looks ahead that wins in the game of business.

We can't tell you in this space, *why* you should have a Modern Truck. But we've some literature that fairly bristles with logical reasoning—that is alive with **practical demonstration.** It's far from prosaic—far from uninteresting. It's readable—sane—clear—comprehensive—and the illustrations are unusual. Send for this literature today. A car today, may be the last



## "MODERN" The Utmost in Commercial Cars

thing in your mind. Next week it may command your first thought. Have the literature now. It's free.

### Dealers Wanted

Live propositions and live dealers naturally gravitate toward one another. If you're a live dealer, you're going to warm up to the "Modern." You can't help it. We've got some literature for you, too. Write for it today.

**The Bowling Green Motor Car Co.**  
 Department A      Bowling Green, Ohio



*Accuracy-Finish-Speed*



**OVER 800  
4" PISTON RINGS  
Ground in 10 Hrs.**

And every one accurately and beautifully finished.

This output has often been obtained on the HEALD PISTON RING GRINDER without sacrificing quality for quantity.

**The Heald Machine Company  
12 New Bond St., WORCESTER, MASS.**

***A Steadily Increasing Demand  
Is the Best Proof of Satisfaction***

During the month of October

**Goodrich Wireless Tires replaced  
570 tires of other makes**

If you are planning to buy a motor truck

*Specify*

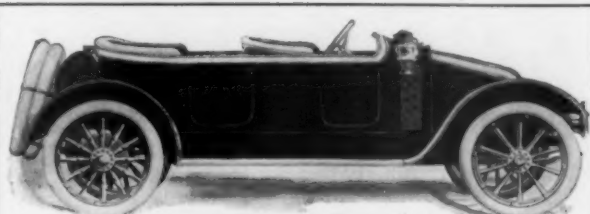
**GOODRICH  
WIRELESS  
MOTOR TRUCK  
TIRES**

[Demountable—Block—Pressed-on—Electric]

**The B. F. Goodrich Company  
Akron, Ohio**



When Writing, Please Say—"Saw Your Ad. in the C C J"



The Features the Buyer Wants in  
Distinctive and Distinguished Cars

## CROXTON

Croxton Cars incorporate all of the features for which the buyer looks in the new season models.

Moreover, many of these have been in use on our cars for five years; so, with us at least, they are not experimental.

Others—which some day we predict will be widely adopted—are yet exclusive to the CROXTON.

These are even more valuable to you in a sales way than those which have now become more or less common in other cars.

A glance at what follows will show you that no car is more complete, of more advanced design or more completely equipped:

Short Turning Radius.

Extremely long and flexible Springs.

Quick Detachable Demountable Rims.

Electric Starting and Lighting System.

An extremely long stroke motor; improved ignition system with automatic spark advance, dispensing

with spark lever on steering wheel.

Improved Thermo-syphon cooling system.

Radiator protected from damage and from mud and water splashing by being placed at rear of motor; no hot air from radiator passes over motor. Improved oiling system. Left-hand drive, with steering gear of new design. Center control. Clutch and transmission enclosed as a unit. Gasoline tank incorporated with cowl dash. Motor protected by hood from dust, dirt and water.

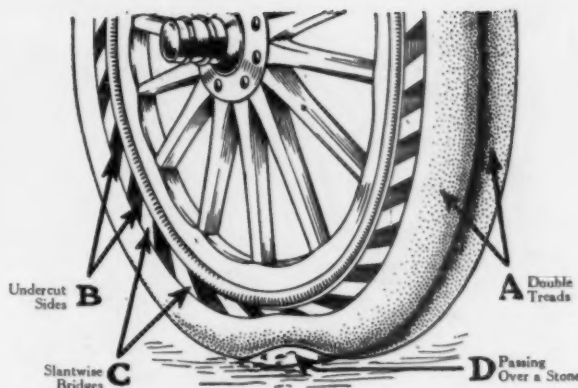
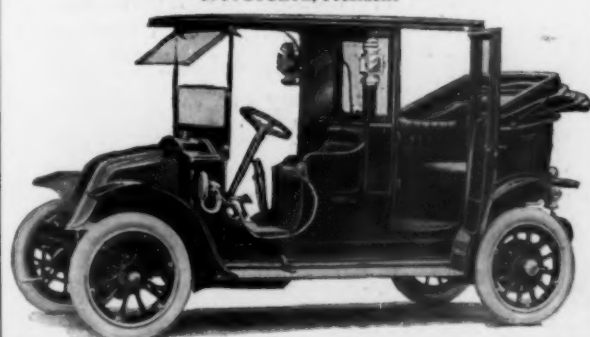
Particularly attractive and distinct body lines.

We are now located in our new factory, with the best and latest machinery, and most complete facilities.

Our Sales Force is yet to be completed by the addition of a few good dealers.

Full details and specifications will be mailed for the asking.

THE CROXTON MOTOR CAR CO., WASHINGTON, PENNSYLVANIA  
J. P. STOLTZ, President



## This Tire Will Protect Your Motor Truck

It is not sufficient that a motor truck tire is *troubleproof* and *serviceable*.

It should possess exceptional *cushioning* qualities, too, so as to protect the delicate mechanical parts of a motor truck from the bumps and jars of rough streets.

That's why the Motz Non-Skid Cushion Tire has forged to the front. Men are finding that it lengthens the life of their motor trucks wonderfully; that there is absolutely no comparison between the Motz Non-Skid Cushion Tire and the common solid tire.

To get the utmost in *cushioning* qualities, we use the famous "417" gum-rubber that costs 50% more than commonly used. The quantity of rubber per tire is also about 50% greater than in tires of the same carrying capacity.

Note, too, our patented construction—double treads, undercut sides, slantwise bridges.

Thus have we built what, after four years' success, seems to be a *perfect* motor truck tire.

We give, on this tire, the maximum guarantee—10,000 miles—one year.

### A Power Saver, Too!

The amount of gasoline or electric current consumed by a motor truck depends greatly upon tires.

Under the most rigid and exacting tests, the Motz Non-Skid Cushion Tire has proven itself the most *efficient*.

We shall publish, in a short time, specific figures, showing the relative efficiency of tires used for commercial purposes.

### More Practical Than Pneumatics

Let Truck owners, who might consider pneumatic tires, bear these facts in mind—that Motz Non-Skid Cushion Tires give the same protection to the car as properly inflated pneumatics.

—that Motz Non-Skid Cushion Tires never puncture or blow out; that they end tire repair bills, dangerous skidding and frequent replacement of tires; that *four*, not five, of these tires make a set; that the Motz gives 300% to 500% more mileage than pneumatic tires.

Motz Non-Skid Cushion Tires are easily applied to any standard clincher, universal quick detachable or demountable rim.

### Write Us for Booklet 85

Drop us a line, stating the make and model of your car and size of your rims, so we can give you our complete proposition. We should like to present you our idea of "tire economy" in the *broadest* sense.

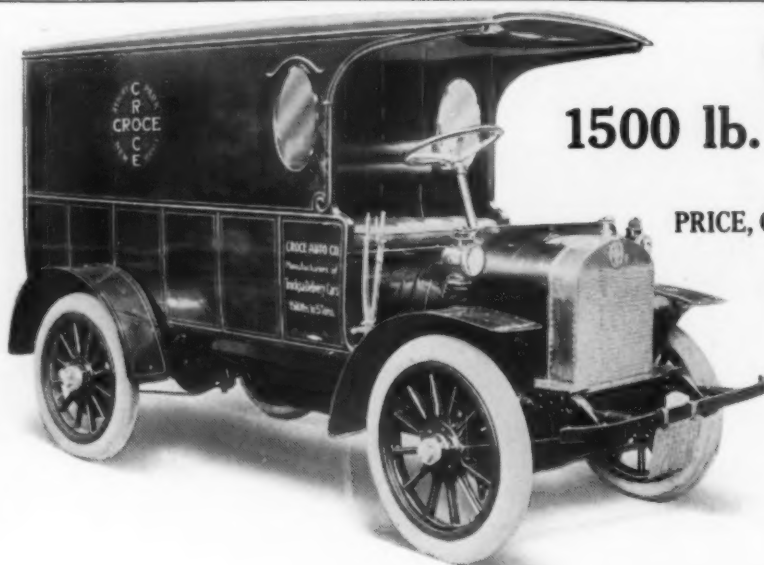
The Motz Tire & Rubber Co., AKRON OHIO

BRANCHES:— Boston, 4 Dundee St.; Chicago, 2023 Michigan Ave.; Cleveland, 1932 Euclid Ave.; Detroit, 999 Woodward Ave.; Kansas City, 409 E. 15th St.; Los Angeles, 336 W. Pico St.; New York, 1737 Broadway; Philadelphia, 1409 Race St.; Pittsburgh, 300 N. Craig St.

## MOTZ NON-SKID CUSHION TIRES

See Our Exhibit at the New York Automobile Show  
Space 209, Balcony, Madison Square Garden

When Writing, Please Say—"Saw Your Ad. in the C C J"



## CROCE 1500 lb. Delivery Wagon (Closed Body)

PRICE, CHASSIS, \$1,650. COMPLETE, \$1,850

Croce Commercial Cars are in a class by themselves, just the car the business men have been looking for so long. The best materials that money can buy are none too good for Croce Cars.

**THE CAR THAT IS BUILT TO LAST TEN YEARS.** Built fool-proof. Anyone can handle it without injuring the car.

There are some men who figure economy in the buying of a car by the lower price; the wise men figure on the life of the car.

There are many cars built for one year's service, two years the limited life. Those cars sell for about half the price of the Croce Car, which is built to last ten years and will outwear five other makes of cheap cars with less trouble and expense. Where does the economy come in?

### SPECIFICATIONS OF CROCE 1500 lb. DELIVERY CAR:—

Motor, 4 Cylinder, 4-cycle block, with 3 main large bearings (crank shaft 14). Bore 3½, stroke 5 inches, L-head. Magneto, Bosch High tension. Carburetor, Schebler Model L. Clutch, Cone, pressed steel with roller control; no wearing parts except when changed speed; Croce Patent. Joints, Spicer universal, on clutch and rear. Transmission, 3-speed and reverse, sliding gear type, with Timken roller bearings. Rear axles full floating type, the largest Timken make, with Timken roller bearings. Tires, 34-4½ front and rear (pneumatic). Front axle, Timken front with Timken roller bearing on wheel and head. Radiator, tubular type, Kells make, with Croce patent soled bottom; guaranteed never to leak or get out of order (barring accident). Steering Gear, screw and nut type, every wearing part automatically taken up, with no back lash.

Springs, Croce design, for easy riding with and without load; special chrome vanadium spring steel of the highest grade.

Croce Commercial cars are not built of cheap materials to meet others in price, but are built on sound business principles for the business man who wants a car to last 10 years, and for the man who knows a good car when he sees it.

The first Croce car was built in 1905; all our product was sold, and built up a reputation locally in New Jersey, until this year, when a large plant is under way with 40,000 square feet of floor space.

Good territory is now open for the sale of Croce trucks of from 1500 lbs. to 5 tons capacity. Send for Catalogue and full information.

**CROCE AUTO CO., ASBURY PARK, N. J.**



LYON GRIPS IN SERVICE

Lyon Grips are used on 10,000 motor wagons today. They are

**Guaranteed for 2,500 miles.**

*Write for catalog describing fully their principle and construction.*

**Lyon Non-Skid Company, 433 North Broad Street, Philadelphia, Pa.**

## Snow or Mud

has no terrors for your trucks if they are equipped with

## Lyon Solid-Tire Grips

They can make their schedules in comfort, and save you and your customers the annoyance of a snow blockade—all at a mileage cost so small as to be negligible.

Lyon Grips are made of oil-tempered alloy steel. Having no loose links, they do not wear out at the joints. They cannot break or damage the tires like chains. They are the product of scientific study of the peculiar needs of solid tires, and three years have proved the correctness of their principle. They do not impair the tire maker's guarantee.





**\$850.00** Either Pneumatic or Solid Tires  
This is but one of our Models

## Do You Realize

that the **Parcel Post** will create an enormous demand for

### Light Delivery Trucks?

Are you ready, Mr. Dealer?

Have you the line for this demand?

**THE COMMERCE CAR** is the logical motor wagon for the Parcel Post Delivery. We are ready to meet your requirements. Wire or write now for an agency proposition. We have some open territory.

### **THE COMMERCE MOTOR CAR COMPANY**

General Offices: 633-639 Penobscot Building

DETROIT, MICHIGAN

## Truck Economy is Dependent

### Upon Knowledge of Truck Mileage

## *Veeder* **Hub Odometer**

**\$25**

At Your Dealer's or  
Direct from Factory



You, as a commercial car user, must look upon the money paid for trucks as just as much of an investment as money paid out for supplies, additions, stocks, etc., and *you should insist on a proper return from this investment as well as upon the others.*

To make your truck investment pay it is **absolutely essential** that accurate records be kept of the distance the truck travels. By such records, and only by these records, can you check your tire guarantee, your drivers' capabilities, gasoline and oil consumption per mile, cost per ton for each mile, etc., etc.

The VEEDER HUB ODOMETER will do this necessary work for you. It registers backwards as well as forward. It is sealed, so cannot be tampered with or altered. It simply takes the place of the regular hub cap and **can be attached by any mechanic.**

### **No Intricate Wiring, No Cables No Magnets, No Tubes**

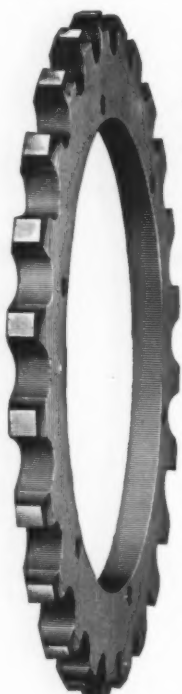
All we need to know is make, model, size of wheel and year of manufacture of your truck. We ship the HUB ODOMETER to you and you do the rest. Being made by the Veeder Manufacturing Company, whose recording instruments are world-famous in all lines of business, is a sufficient guarantee that the VEEDER HUB ODOMETER is simple, accurate and durable.

Send for Catalogue D, descriptive of HUB ODOMETER.

### **The Veeder Manufacturing Co., Hartford, Conn.**

Makers of Cyclometers, Odometers, Tachometers, Tachodometers, Counters and Small Die Castings.

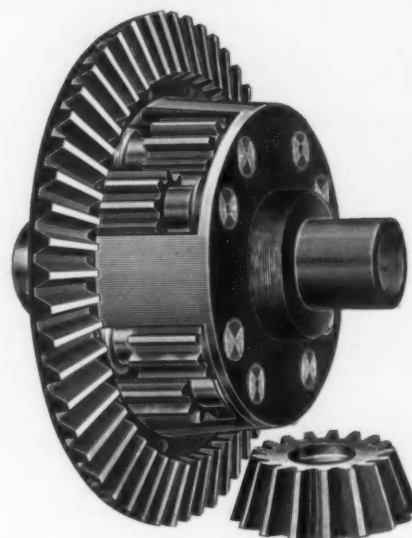
When Writing, Please Say—"Saw Your Ad. in the C C J"



## CULLMAN SPROCKETS and Differentials

in stock and to  
order.

Send for catalog  
and let us quote  
you on your re-  
quirements.



**CULLMAN WHEEL COMPANY, CHICAGO**  
1351 GREENWOOD TERRACE

## WARNER-TOLEDO

Write us relative to our durable and efficient

COMMERCIAL  
**Steering  
Gears**



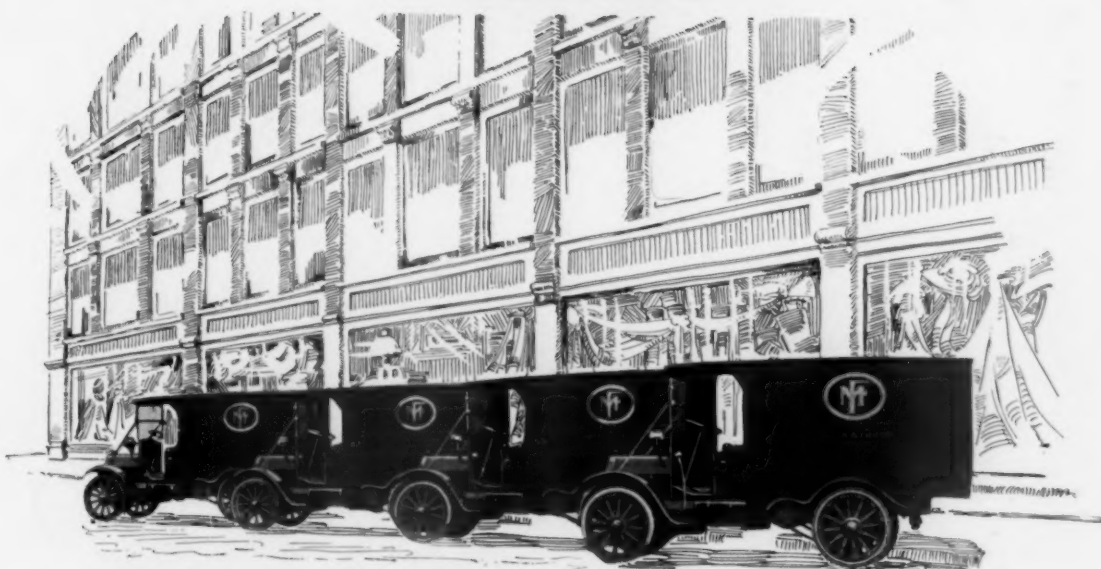
**The Warner Manufacturing Company**  
Toledo, Ohio, U. S. A.

When Writing, Please Say—"Saw Your Ad. in the C C J"

# THE FEDERAL

## ONE TON TRUCK

### \$1800



Federal one-ton chassis, including seat, \$1800. Body Type at purchaser's Option. Wheelbase optional 110-inch or 144-inch. Motor, 4 Cylinders 30 horse-power. Magneto, high tension, Clutch 16-inch cone. Transmission three speeds forward and reverse. Tires, solid, 36x3½-inch front and 36x4-inch rear. Timken bearings.

## The Largest Users of Trucks Buy the Federal

These large users of motor trucks have owned, tested and investigated many different makes from one ton to four ton capacity.

Experience has taught them the essential features to look for to insure efficiency.

That the Federal has measured up to the high standard set by these large users of trucks, and has withstood the many severe tests, to which it has been subjected, is shown by the many re-orders.

Write for booklet — "The Federal in Your Line."

**The Federal Motor Truck Company**  
DETROIT, MICHIGAN

New Factory, Dept. A, Leavitt and Campbell Avenues

### A Few of the Largest Users of Trucks Who Operate Federals

	No. of Trucks
Meier & Frank, Portland, Ore.	4
Marshall Field Co., Chicago, Ill.	8
Portland Ry. Light & Power Co., Portland, Ore.	10
Ward Bread Co., N. Y. City	10
Motor Bus Transit Co., Gary, Ind.	5
Breuner Furniture Co., San Francisco, Sacramento, Oakland, Cal.	3
Wm. J. Lemp Brew. Co., St. Louis, Mo.	1
Swift & Co., St. Louis, Mo.	1
Armour & Co., St. Louis, Mo.	1
American Bank Note Company, N. Y. City	2



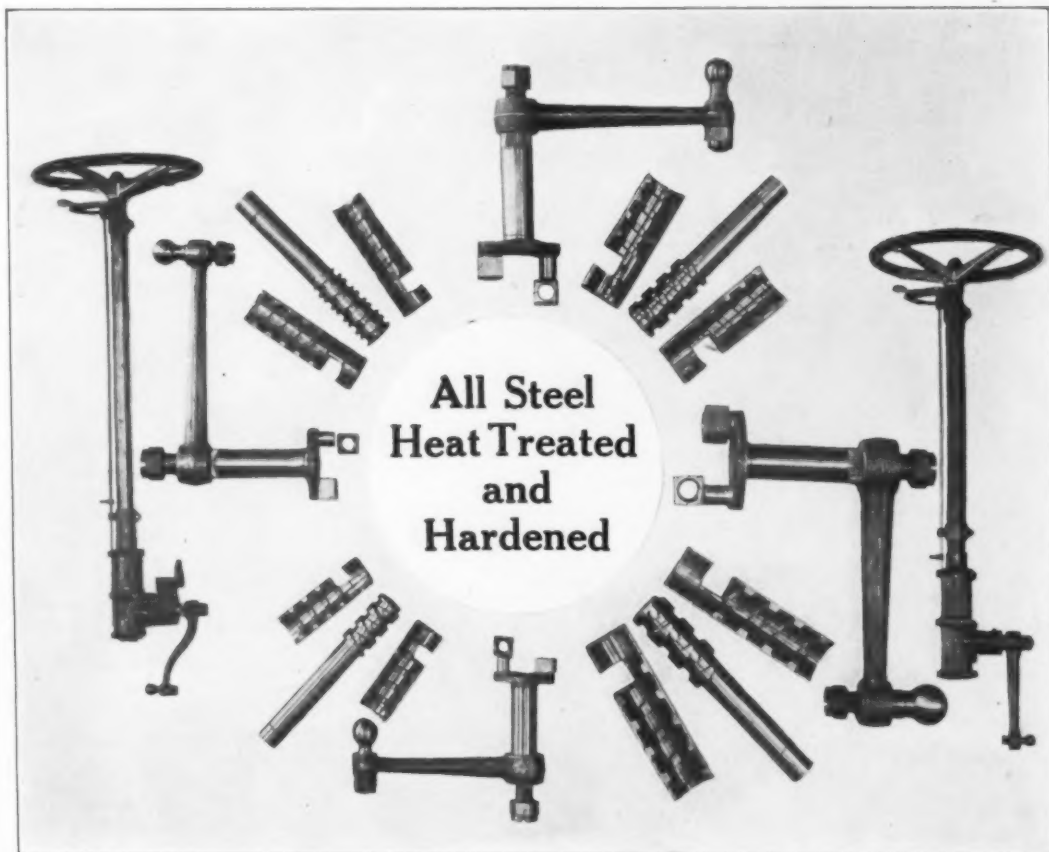
If you are going to the Chicago or New  
York Auto Show come and see

# The 1913 All-Steel Truck Gear

## 4 SIZES

*Section 617*  
*Madison Square, N. Y.*

*Section 31*  
*Armory Building, Chicago*



**CAPACITY, 6 Tons to 1500 lb. Wagon**

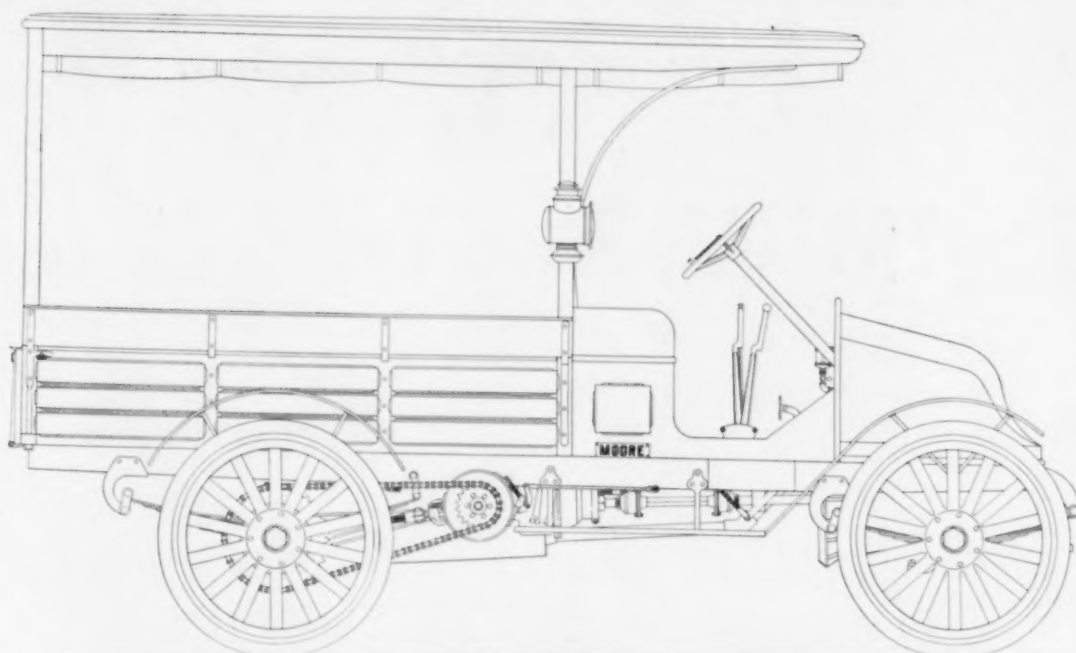
**GASOLINE**

**1800 lb. to 4500 lb. Pleasure Car**

**ELECTRIC**

*Send for Blue Prints*

**LAVIGNE GEAR CO.    Station A    RACINE, WIS.**



# THE MOORE TRUCK

**SIMPLE                      RELIABLE                      ECONOMICAL**

CAPACITY, 1600 POUNDS

PRICE OF CHASSIS, \$1300.00

The Moore represents the real advance in commercial truck construction, its three-cylinder two-cycle variable-port engine offering the smooth propulsive effort of a four-cycle six, with greater flexibility, much simpler operation and a low engine speed that saves immensely in wear, in lubrication, lessens heat and permits the safe employment of air-cooling.

There is no carburetor adjustment, governor nor anything else about the engine for an inexperienced driver to tamper with, or get out of order and the truck speed is limited to about 17 miles per hour, at the maximum speed of the motor.

The average engine speed is but 500 to 600 revolutions per minute, yet with our system of adjustable ports, the motor pulls smoothly at all speeds and is economical of fuel.

One lever on the steering post operates the engine, and the brakes, both sets equalized, operate in usual manner. The transmission is so protected that high gear cannot be thrown in until both low and reverse are out, and pressure on either low or reverse pedal automatically throws the high speed gears out. In other words, the Moore Truck is simpler and safer to operate than any other ever offered and is less subject to repair troubles—just right for any delivery work.

## Specifications: MODEL C

**Motor.** 20 h.p. MOORE 3 cylinder, 4-in. bore and 4-in. stroke, three-port, two-cycle air-cooled with MOORE variable ports. Vertical under hood.

**Motor Lubrication.** One quart of oil put into fuel tank for every five gallons of gasoline.

**Carburetor.** MOORE Special, always wide open.

**Ignition.** Bosch with fixed spark.

**Transmission.** Special Planetary—two forward and one reverse speed, ball-bearings, oil-tight case. Safety gear-shifting device.

**Clutch.** Multiple disc on high gear.

**Control.** Throttle lever on steering-wheel to vary port areas. Service brake (on jack-shaft) controlled by right pedal, reverse by center pedal, low speed by left pedal. High gear and emergency brakes (on rear wheels) by center hand levers.

**Drive.** Double side chain

**Brakes.** Service brakes on jack-shaft,

emergency brakes on rear wheels. Both have equalizers.

**Tires.** Solid, rear 3-in., front 2½-in., clincher rims, motor truck type.

**Axles.** VANADIUM STEEL FORGINGS: both rear and front, I-beam section 2½-in. by 1¼-in., spindles, 1½-in.

**Wheels.** Artillery type, 36-in., 14 spokes, 8¾-in. hub flanges, front and rear.

**Wheel Base.** 102 inches.

**Bearings.** Bower roller.

**Tread.** Standard, 56 inches.

**Springs.** Semi-elliptic; front 38-in. by 2-in., rear 40-in. by 2-in.

**Capacity.** 1600 lb.

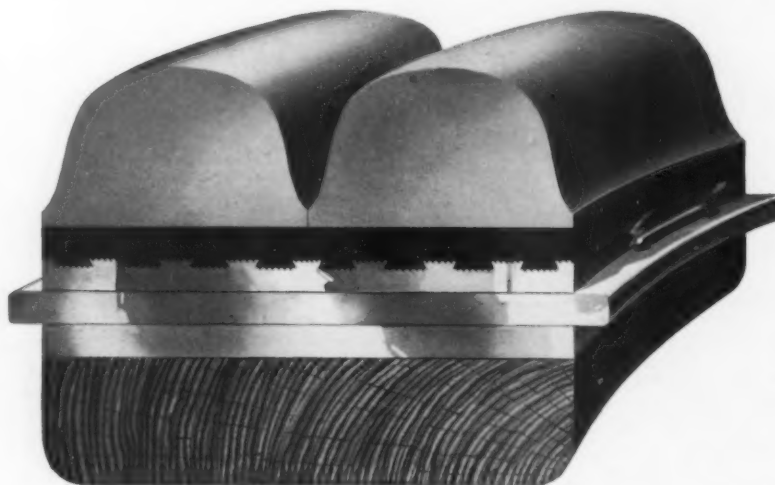
**Weight of Chassis.** 2300 lb.

**Steering Gear.** Worm and sector, irreversible.

**Special Features.** Primer on dash, also wire control of carburetor air inlet.

## PALMER-MOORE COMPANY

SYRACUSE  
NEW YORK



## You Should Know About This New Motor Truck Tire

Because it will keep your trucks in service.

Because the tire holds securely to the rim and cannot creep, owing to the fact that it is keyed on the S. A. E. band under high pressure.

Because you can run the tire clear down to the hard rubber counter base without causing chunks of the rubber tread to tear out.

# REPUBLIC

## STEEL BASE WIRELESS MOTOR TRUCK TIRE

*Guaranteed 8000 Miles*

Because the only thing that can affect this tire is external road wear.

Because it has a rubber tread which is a highly perfected compound yielding the maximum of resiliency and wear.

Because this new tire is thoroughly practical. There are no foolish experiments, no untried theories, no untested fads, no useless frills.

Because the whole tire, from steel base to the

road-wearing surface of the rubber tread, is an inseparable unit capable of resisting the most abnormal strain.

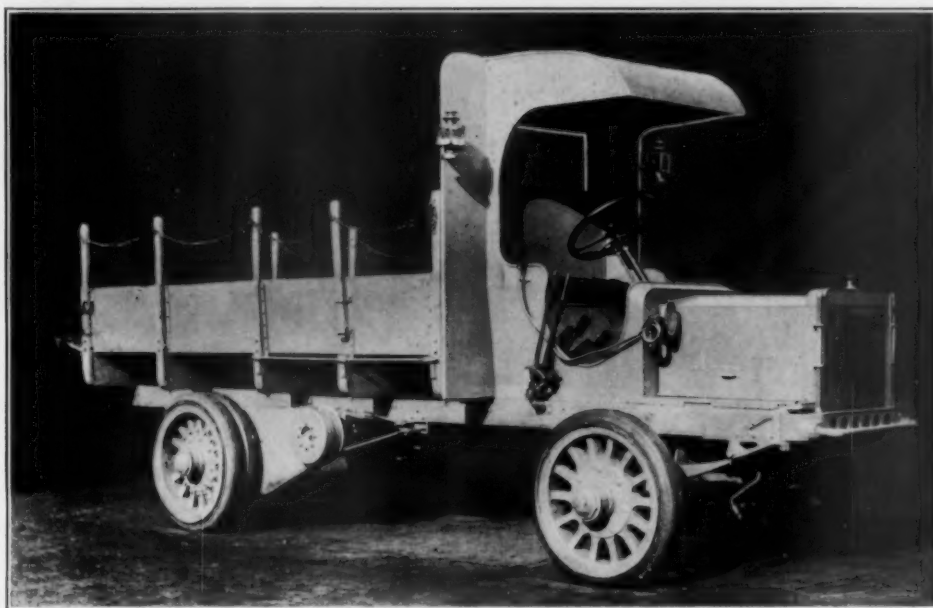
Write us and we'll explain how this new motor truck tire is made, and have our experts help you with your motor truck tire problems. We'll also send you price list and the name of our nearest agent, who will be glad to equip your truck.

BRANCHES AND AGENCIES IN THE PRINCIPAL CITIES

**THE REPUBLIC RUBBER COMPANY**  
YOUNGSTOWN, O.



# Devon TRUCKS



**PRICE** Model E, 3½ TON, complete with Stake Body and full equipment **\$3250**

**PRICE** Model D, 5 TON, complete with Stake Body and full equipment **\$3750**


OUR DEVON TRUCKS have been placed on the market after two years test in actual daily service under the most severe conditions. All other American and European models have been carefully studied to recognize their defects or good points, and new, valuable improvements exclusively our own have been adopted. THE BENEFIT OF OUR EXPENSE AND EXPERIENCE IS OFFERED YOU NOW.

Devon Trucks positively give GREATER MILEAGE, LESS TROUBLE TO OPERATE, NEED FEWER REPAIRS, RATE VERY HIGH IN FUEL ECONOMY, AND WILL PROVE IN ACTUAL SERVICE MORE DURABLE AND EFFICIENT THAN MANY OTHER TRUCKS OF GREATER LOAD CAPACITY AND HIGHER PRICE.

The best of everything has been used and no expense spared to furnish an essentially HIGH-GRADE COMMERCIAL VEHICLE.

*Send immediately for our Catalogue J, giving detailed specifications and further interesting and valuable information*

**Devon Engineering Company**  
512 Cherry Street, Philadelphia



**GERMANY**  
Düsseldorf

**FRANCE**  
Ivryport - Paris

**UNITED STATES**  
New Britain

**RHINELAND**  
German

**FAFNIR** American

**R.B.F.**  
French

**Insurance for Builder & User**  
**Universal Use & Reputation**


FACTORIES IN THREE COUNTRIES

**Strikes, Fire, Flood or War**  
**Cannot Stop Deliveries.**

**A FEW USERS OF THESE BEARINGS**

PEUGEOT	SEAGRAVE
PANHARD & LEVASSOR	MICHIGAN BUGGY CO.
DELAHAYE	PULLMAN
DELAUNAY-BELLEVILLE	NATIONAL
RENAULT	MOON
ESTABLIS HOTCHKISS	GRAMM
AUTO-METALLURGIQUE	AMERICAN
SCHNEIDER	DAIMLER CO., COVENTRY
ISOTTA FRASCHINI	USINES PIPE
CLEMENT-BAYARD	GEBRÜDER STOEWER
CADILLAC	ADLERWERKE
MERCER	CIE. D'AUTO FIACRES
PEERLESS	NAGANT FRERES
KISSEL KAR	CALTHORPE
LAUTH-JUERGENS	MINERVA MOTORS

**RHINELAND MACHINE WORKS CO.**  
140 West 42nd Street, New York



When Writing, Please Say—"Saw Your Ad. in the C C J"

# Smith MILWAUKEE WORM-DRIVE MOTOR TRUCKS

EFFICIENT—ECONOMICAL—SILENT



*One of The Texas Company's fleet of trucks in service at Chicago and St. Paul*

## One Hundred Thousand Miles Without Repair or Replacement of Worm Gears

is the record of several motor 'buses operated by the London General Omnibus Co., who discarded both shaft and chain drive a year ago, and are now adding worm-gear driven machines at the rate of 30 a week—or 1500 a year. In all, this Company operates 2,135 motor 'buses, which have a passenger load rating equal to 3½ tons. Each machine averages 112 miles a day. All are fitted with worm-gear drive and the average life of the worm-gear in this trying service is well over 50,000 miles.

### **Could stronger evidence of the supremacy of worm-gear drive be offered?**

Smith-Milwaukee Worm-Drive Motor Trucks represent the most advanced ideas in motor truck construction. They are highly efficient, economical and absolutely silent in operation, for all other features are of the same high standard of efficiency as the worm-gear drive. Details and specifications upon request.

### **Some valuable territory still open for High-Class Representatives**

We will exhibit at the New York Show, January 20th to 25th, in the Grand Central Palace, Space 32-A, main floor.

Chicago Show, February 10th to 15th, Section D, First Regiment Armory.

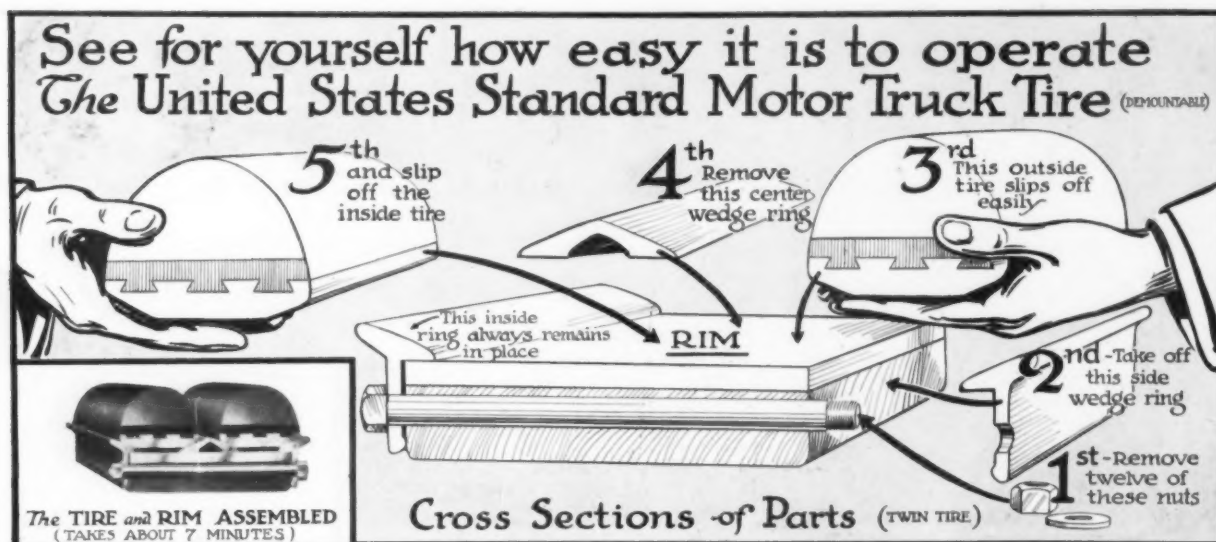
Boston Show, March 19th to 26th, Space 38, Mechanic's Building.

Address all communications to General Sales Office, 2328-30 Michigan Avenue, Chicago, Ill.

**A. O. Smith Company**

Factories at Milwaukee, Wisconsin, U. S. A.





Here is a tire that has created a veritable sensation in the motor truck world—a tire that is mechanically correct in every detail, and that will permit of a complete tire change in fifteen minutes' time.

Your driver becomes your tire repairman when you equip your truck with this tire.

A hammer, a wrench and his two hands will be his complete repair shop equipment.

A tire change will mean a few moments' work in your

own garage, after working hours, instead of a truck laid up for days at a time while a wheel is away at some distant tire repair station.

Figure for yourself what this protection against the tying up of your trucks will mean to you in the course of a year.

Furthermore, United States Standard Tires bear an absolute guarantee that makes them extremely economical tires to use from the standpoint of mileage. They are:

**Absolutely Guaranteed For 10,000 Miles of Service**

conditional upon this mileage being used within one year's time.

**UNITED STATES TIRE COMPANY · NEW YORK**

# GASOLINE & OIL TANKS

SEAMLESS  
TANKS

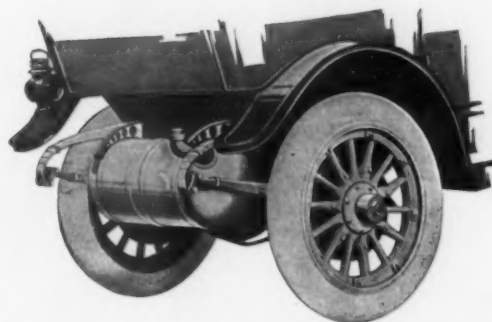
COMPARTMENT TANKS—GASOLINE  
CONTENTS INDICATORS



ALL SIZES—ALL MODELS  
BIG ONES AND LITTLE ONES



HIGH-PRESSURE AIR TANKS  
FOR MOTOR STARTERS



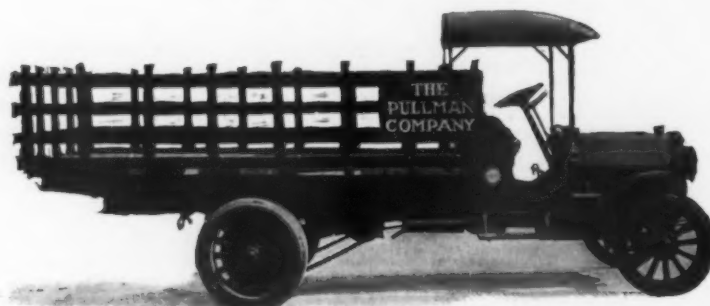
UNDER-HUNG PRESSURE FEED  
COMPLETE WITH FITTINGS, ETC.

LEAKLESS  
TANKS

**JANNEY, STEINMETZ & Co.**  
PHILADELPHIA AND NEW YORK



# Velie



Velie Trucks have demonstrated their efficiency by most economically standing the grind of long hauls under unusually heavy loads. The simple fact that Armour & Company, The Pullman Co., Price Baking Powder Company, The U. S. Government, The American Express Company, and many others of like experience are users of Velie trucks, is an assurance of their service and reliability.

We want to place our Commercial Vehicle catalog in the hands of every man who has transportation problems to solve. Write us for a copy.

### Look For Our Exhibits At the New York Shows

Velie Pleasure Vehicles	Space 30	Grand Central Palace
Velie Commercial Cars	Space A101	Madison Square Garden

### Electric Starter, Electric Lights and A Complete Equipment

Included With The

Velie, Model R - - \$1500.00

Velie, Model S - - \$2000.00

Other Models \$1350.00 to \$3000.00—A Line Complete in Itself

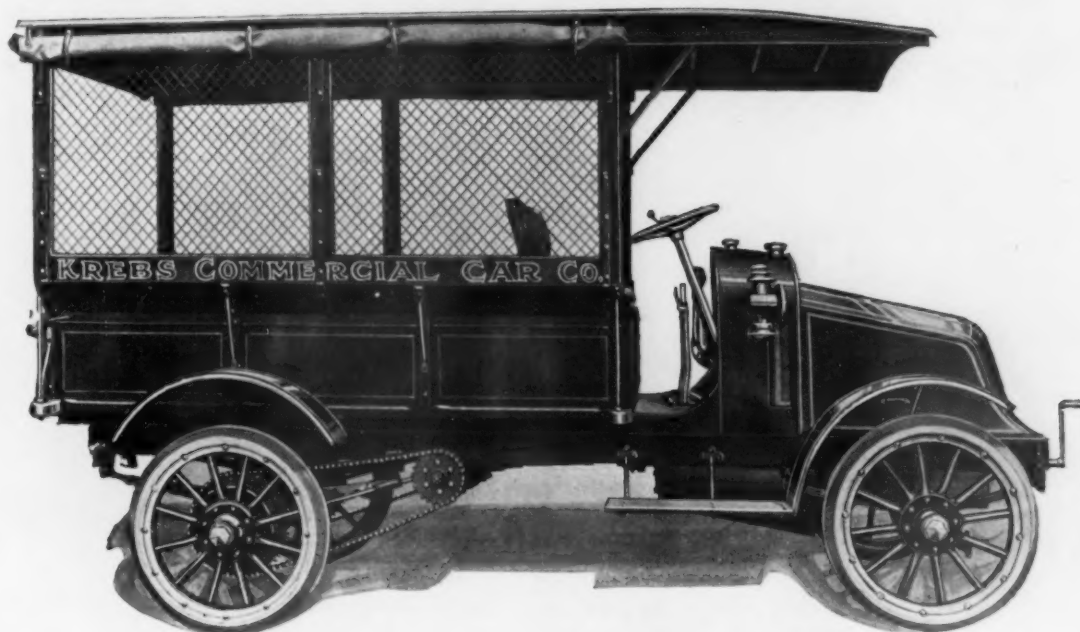


In the Velie you get far more than the fulfillment of your ideal of a motor car—you get Velie Service which is infinitely as great as the unsurpassed value in the car itself. Dealers and Buyers alike should investigate our 1913 proposition.

## Velie Motor Vehicle Co., Moline, Ill.



## Krebs Car Drivers Are All Experts Its Governor Makes It "The Car That Thinks"



**Model D, Krebs Commercial Car with standard delivery body, screened.  
Guaranteed capacity, 1½ tons. Price, \$1,775 for chassis alone.**

You can safely give the Krebs to an inexperienced man; just trust to its wonderful governor. It will always maintain the speed at which **you** want your car driven, without regard to road conditions, and it is more economical with fuel than the most expert of human drivers.

Think what it means to know that if your commercial car is a Krebs, it will always be handled perfectly.

That its governor may be set for any desired speed, and it will neither race nor lag all day.

That whoever drives it, there will be no waste of fuel—no mishandling—no mistakes of operation.

The governor of the Krebs furnishes the brain work—**your driver has nothing to do but steer.**

The splendid car illustrated will be at the New York and Chicago shows. It is fitted with a self-starter and electric lights, and is the finest car of its capacity in America. Don't fail to see it.

Our Model A has a chain-driven chassis, solid tires, standard Open Express Body and Cab Seat. Guaranteed capacity, 1 ton. Price, \$1,510. Speed up to 15 miles per hour.

Our Model B, with standard delivery body, screened, is fitted with shaft-driven chassis and pneumatic tires. Guaranteed capacity ¾-ton. Price, \$1,550. Speed up to 20 miles per hour.

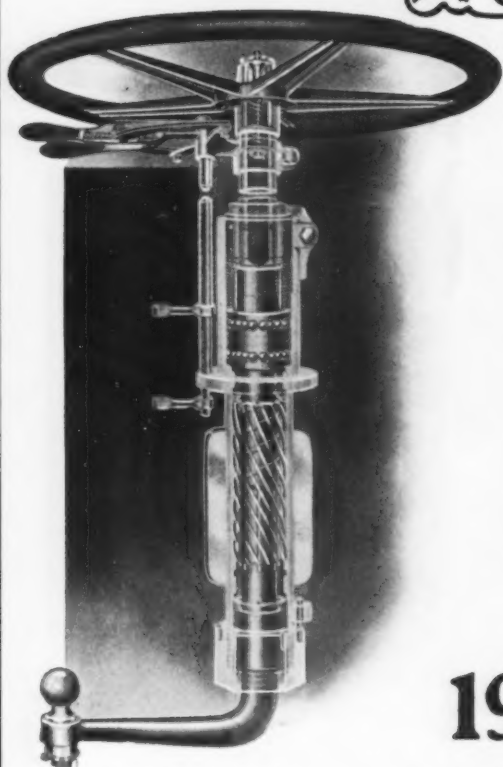
Models A and B have our own thoroughly trustworthy valveless motors. Model D, shown above, has a four cylinder 30 H. P. Rutenber. Cylinders 3¼ x 5¼ inch. Price of chassis alone, \$1,775. Starting and electric lighting system, if desired, extra.

The special features of the Krebs line make it unusually attractive to high-class dealers. The capacities are those that are most wanted everywhere. We have good territory for good men. Don't delay in making application.

**New York Show, No. 20 A, Main Floor, Grand Central Palace  
Chicago Show, Section L, the Coliseum**

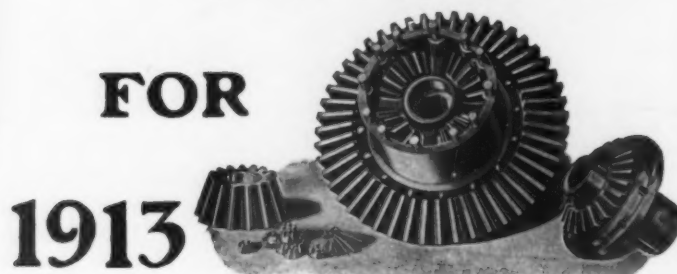
*Write For Our New Booklet Showing The Models*

**THE KREBS COMMERCIAL CAR CO., Clyde, Ohio**



# ROSS

## Steering and Differential GEARS



FOR

1913

THE STANDARD ON MOTOR TRUCKS  
are exhibited in the MADISON SQUARE GARDEN, SPACE 309 and in the  
GRAND CENTRAL PALACE, SPACE 226

BUT our new, modern, fireproof factory is not on exhibit in New York. However, it bears  
critical inspection.

Before buying Steering and Differential Gears for 1913, investigate our product and plant.

**ROSS GEAR & TOOL CO., 790 Heath St., Lafayette, Ind.**



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# GRAMM TRUCKS

**T**HE Gramm motor truck ushers in the most practical, economical and systematic method of handling merchandise. It stops up the old time leaks. It broadens and expands your business; removes doubt and worry; cleans out all the old uncertainties, and, above all, makes possible an organized method of transporting goods, the cost of which per mile or stop, or package is way below any uncertain figure you might have according to your present horse and wagon methods.

*Please address Department 12*

**The Gramm Motor Truck Co., Lima, Ohio**



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When Writing, Please Say—"Saw Your Ad. in the C C J"





## Chosen for the world's biggest contracting job

**T**HE Catskill Aqueduct is the largest undertaking of its kind in the world. In a great many respects it is larger and more important than the Panama Canal. This aqueduct is to furnish New York City with water. It will supply greater New York with 600,000,000 gallons of water every twenty-four hours—which is 100 gallons a day for 6,000,000 people. It will cost over \$200,000,000. It is over 85 miles long.

*Practically every big contractor on the aqueduct is using Garford Trucks. And each one of these contractors chose the Garford after testing and investigating all the best known products.*

One big contractor writes:

"We made some very interesting experiments. For instance, over a given

territory, one Garford truck made twenty-one trips a day, carrying four tons per trip. A team operating over the same haul made but nine trips and carried but two tons per trip."

Another large concern writes that eight Garford trucks are doing the work of fifty horses.

Another writes each truck can do two hundred per cent. as much work in the same time as a single team.

A line to us will bring you complete information regarding the installation of one or more Garford trucks. We have the facts and figures that will convince you. We can advise you as to style, number, size, costs and everything else that might occur to you.

All information gratis.

Please address Dept. 11.

**The Garford Company, Elyria, Ohio**

# ***Continental***

## **A motor that typifies the high worth of every truck it drives**

A man speaks with pride of the Continental Motor in his truck.

A manufacturer installs it and advertises the fact.

Both are moved by the same impulse; and behind that impulse is the universal recognition of the Continental as a mark of high quality and distinction.

The Continental is so accepted because it long since has proved its right to the fullest confidence of the truck owner and the truck manufacturer.

Think of a truck powered with a Continental Motor.

Recall what you have heard said about it, not only by men who own that particular make, but also by men who own others.

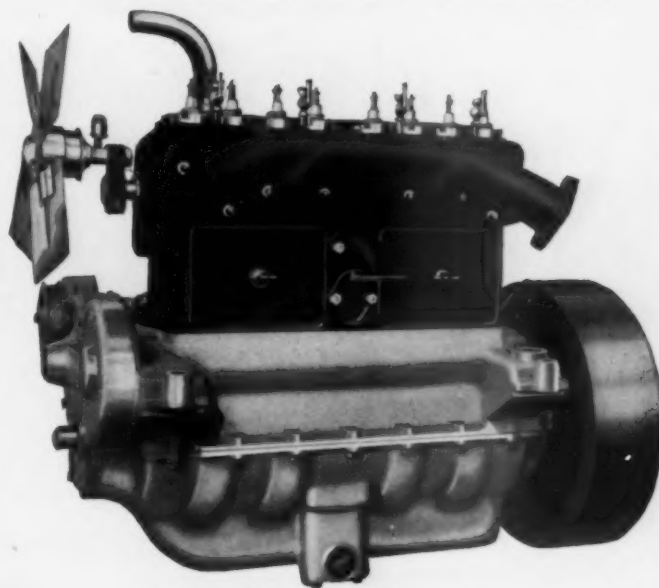
Recollection will tell you that the truck's reputation is high—it is regarded as a good truck.

This idea, as we have said, is widespread.

A Continental Motor is looked upon as standing sponsor for the quality of the truck.

We want you to get acquainted with the Continental—whether you are owner, engineer or manufacturer.

It will not be troublesome to do this, for at both the New York and Chicago



**20 to 70 H.P.**

shows, many of the leading trucks will be equipped with the Continental.

Note, also, the high percentage and class of these trucks; this will be impressive testimony.

Specifications, literature, etc. mailed on request.

## **Continental Motor Mfg. Co., Detroit, Mich.**

FACTORY REPRESENTATIVE, K. F. PETERSON,  
122 S. Michigan Blvd., Chicago, Ill.

CHICAGO SHOW EXHIBIT, FEBRUARY 1-18  
Space 56, Coliseum Gallery



A satisfactory and economical solution of your transportation problem is found in the Pierce-Arrow Truck with its worm gear drive, which minimizes power waste and upkeep costs. The efficiency of this drive is proved by three years of actual service in Pierce-Arrow Trucks and further assured in this guarantee:

The worm wheel and worm shaft, generally known as worm gear construction, employed in the Pierce-Arrow Truck, are warranted to fulfill their functions for one year from date of shipment under normal service.

# PIERCE-ARROW

## 5-TON MOTOR TRUCKS

THE PIERCE-ARROW MOTOR CAR COMPANY, BUFFALO, N. Y.

---

When Writing, Please Say—"Saw Your Ad. in the C C J"



# WESTON MOTT & CO.

FLINT, MICH.

## Next to Design

Inspection is the most important factor in modern manufacturing. This is especially true in the manufacture of automobiles and parts. The illustration gives some idea of the vast quantities of axles we turn out and in order to make every part interchangeable the inspection must be rigid in every detail. Thousands of these parts are sent through the various machines at different times, inspected and later the entire axle is assembled without the aid of filing or fitting. Perfect inspection only makes this a possibility.



INSPECTING REAR AXLE HOUSINGS

# THE NATIONAL AUTO SHOW



Under Auspices of National Association of  
Automobile Manufacturers, Inc.

AT

## CHICAGO

Coliseum and 1st Regiment Armory

February 10 to 15

## Commercial Vehicles

### Parts and Accessories

THE FOLLOWING TRUCKS AND WAGONS WILL BE EXHIBITED:

ALCO  
BAKER  
POPE-HARTFORD  
PIERCE-ARROW  
MACK  
REO  
FEDERAL  
LAUTH-JUERGENS  
CHASE  
AVERY  
SPEEDWELL  
STERNBERG  
LANSDEN  
DART

SERVICE  
BROWN  
SCHACHT  
MAIS  
PACKARD  
RELIANCE  
AUTOCAR  
WAVERLEY  
SAURER  
STUDEBAKER  
KISSEL  
SELDEN  
ADAMS  
UNIVERSAL  
HUPP

LITTLE GIANT  
OLD RELIABLE  
CLARK  
STANDARD  
COMMERCE  
FOUR-WHEEL-DRIVE  
MERCURY  
STEWART  
WHITE  
KNOX  
PEERLESS  
GENERAL VEHICLE  
G.M.C.  
VELIE

SMITH-MILWAUKEE  
RELIABLE DAYTON  
WALKER  
I.H.C.  
BUFFALO ELECTRIC  
NATIONAL  
GRAMM-BERNSTEIN  
HARDER  
MOGUL  
KOEHLER  
KENTUCKY  
GRAMM  
KELLY  
LOCOMOBILE  
LA FRANCE

BUICK  
GARFORD  
HEWITT  
RAMBLER  
LIPPARD-STEWART  
UNITED STATES  
MODERN  
INDIANA  
BEST  
KREBS  
BESSEMER  
SANFORD  
MENOMINEE  
WARE

February 1 to 8

## Passenger Vehicles

### Parts and Accessories

The Entire Trade, In One Comprehensive Exhibition,  
For the Thirteenth Consecutive Season

S. A. MILES, Manager

Auditorium Hotel, Chicago

**Q** The illustration represents the popular Budd All-Steel Dump Body—a most practical design for rear end unloading. The hoist is operated by hand and the rear end is equipped with a substantial lock. Built on a channel frame which is bolted on chassis. Furnished in any capacity.



## Put an All-Steel Body on Your Truck

**Q** Progress is marked by improvement. Evolution is the order of the day. Just as the motor truck has proven its supremacy over the horse-drawn vehicle, so are Budd's All-Steel Vehicle Bodies superseding the ordinary body of wood. The answer lies in two words, "Proven Superiority."

**Q** The Budd All-Steel Vehicle Body is a revelation in truck body building. Made of special open-hearth steel and worked by the exclusive Budd process, innumerable designs in any style body are possible, and the maximum of serviceability, stability and strength is assured.

## Budd ALL-STEEL VEHICLE Bodies

are practically indestructible. They are proof against the elements—immune from the ravages of time, wear and tear. They will not warp or crack. They cannot rot or split. Light in weight, they are easy on tires.

By use of special machinery each body is worked into shape. All joints are carefully welded. Thus a perfect surface is assured, which in turn guarantees the highest quality of "oven-baked" enamel finish. A finish that practically becomes an integral portion of the steel and eliminates the expense of frequent repainting.

From a sanitary standpoint alone, Budd All-Steel Bodies demand your attention. All corners are made round. There is no chance for the accumulation of dirt.

Steel will not absorb moisture; therefore, perfect sanitation is possible.

When you stop to consider the fact that Budd's All-Steel Bodies represent the height of efficiency in service and durability—that they give you every advantage of the wooden body, yet none of its faults, and practically cost no more than a first-class body of wood, it is but justice to yourself that you give them a thorough investigation.

Whether you are a manufacturer of commercial vehicles or a prospective buyer of a motor truck, it will pay you to look into this matter now. We have some facts upon All-Steel Bodies that will prove of vital interest to you. Write for them today.

See our exhibit at the New York Automobile Show

### Edward G. Budd-Manufacturing Co.

*Originators of the All-Steel Body for Automobiles and Motor Vehicles*

Ontario and I Streets, D12

PHILADELPHIA, PA.



# THE NATIONAL AUTO SHOW



Under Auspices of National Association of  
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February 10 to 15

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FEDERAL  
LAUTH-JUERGENS  
CHASE  
AVERY  
SPEEDWELL  
STERNBERG  
LANSDEN  
DART

SERVICE  
BROWN  
SCHACHT  
MAIS  
PACKARD  
RELIANCE  
AUTOCAR  
WAYERLEY  
SAURER  
STUDEBAKER  
KISSEL  
SELDEN  
ADAMS  
UNIVERSAL  
HUPP

LITTLE GIANT  
OLD RELIABLE  
CLARK  
STANDARD  
COMMERCE  
FOUR-WHEEL-DRIVE  
MERCURY  
STEWART  
WHITE  
KNOX  
PEERLESS  
GENERAL VEHICLE  
G.M.C.  
VELIE

SMITH-MILWAUKEE  
RELIABLE DAYTON  
WALKER  
I.H.C.  
BUFFALO ELECTRIC  
NATIONAL  
GRAMM-BERNSTEIN  
HARDER  
MOGUL  
KOEHLER  
KENTUCKY  
GRAMM  
KELLY  
LOCOMOBILE  
LA FRANCE

BUICK  
GARFORD  
HEWITT  
RAMBLER  
LIPPARD-STEWART  
UNITED STATES  
MODERN  
INDIANA  
BEST  
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BESSEMER  
SANFORD  
MENOMINEE  
WARE

February 1 to 8

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From a sanitary standpoint alone, Budd All-Steel Bodies demand your attention. All corners are made round. There is no chance for the accumulation of dirt.

Steel will not absorb moisture; therefore, perfect sanitation is possible.

When you stop to consider the fact that Budd's All-Steel Bodies represent the height of efficiency in service and durability—that they give you every advantage of the wooden body, yet none of its faults, and practically cost no more than a first-class body of wood, it is but justice to yourself that you give them a thorough investigation.

Whether you are a manufacturer of commercial vehicles or a prospective buyer of a motor truck, it will pay you to look into this matter now. We have some facts upon All-Steel Bodies that will prove of vital interest to you. Write for them today.

See our exhibit at the New York Automobile Show

**Edward G. Budd Manufacturing Co.**

*Originators of the All-Steel Body for Automobiles and Motor Vehicles*

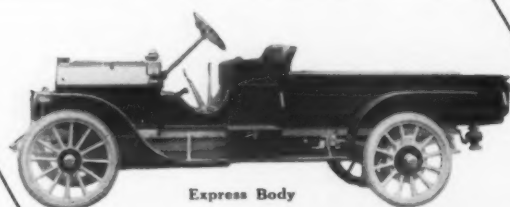
Ontario and I Streets, D12

PHILADELPHIA, PA.

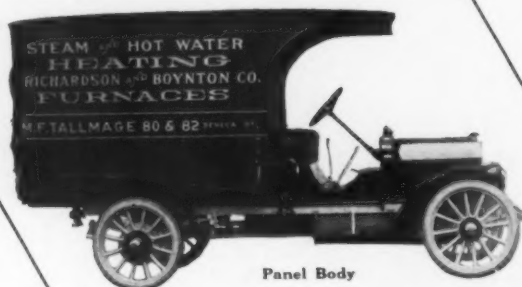
# "The Menominee"

## Motor Truck

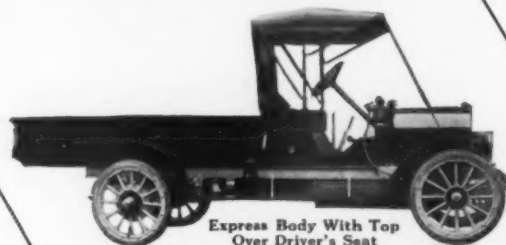
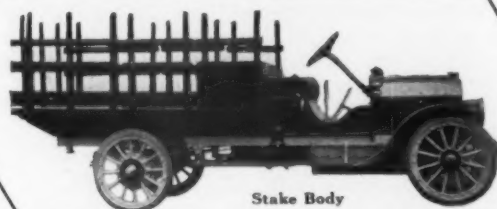
1500 lbs. Carrying Capacity, Express or Stake Body - \$1200.00  
 2000 lbs. Carrying Capacity, Express or Stake Body - \$1500.00



Express Body



Panel Body

Express Body With Top  
Over Driver's Seat

Stake Body

### Special Features In

### "The Menominee"

Four-Cylinder Unit Power Plant,  
Three-Point Suspension.

Sliding Gear Transmission.  
Gear Reduction.

Shaft Drive.

Full-Floating Rear  
Axle.

Three-Point Platform  
Spring Suspension.

Easy Accessibility  
to all Parts.

Beautiful in  
Design.

### *Simplicity, Practicability and Durability*

are the potent features  
which have made "The  
Menominee" Motor Truck  
recognized as the Commer-  
cial Car meeting the exact  
demands of the trade and the  
best seller on the market.

Send For Our Free Illustrated Catalog and Agency Proposition

**D. F. POYER COMPANY**  
**MENOMINEE** - - - **MICHIGAN**



# Enjoy the Day



in a car  
mounted on  
HESS-BRIGHT BALL BEARINGS



**THE HESS-BRIGHT MANUFACTURING COMPANY, Philadelphia, Pa.**

When Writing, Please Say—"Saw Your Ad. in the C C J"

# KOEHLER COMMERCIAL CAR

CARRYING CAPACITY 1600 <sup>LBS.</sup> **\$750.**  
PRICE

## THE CAR THAT DELIVERS THE GOODS

The KOEHLER Commercial Car not only "delivers the goods," but it does so at less cost per pound per mile, than any other **known** method of transportation. You get the best in material, equipment and workmanship—**three** factors necessary to the highly efficient delivery wagon. Our large manufacturing facilities and "Square Deal" policy, enable us to market the KOEHLER at the unusual price of \$750—and remember the capacity—1600 lbs. The KOEHLER will be the big thing at the Palace Show—**don't miss it!**



OPEN FLARE-BOARD TYPE

Large and roomy. Inside measurements, 44 inches wide, 84 inches back of driver's seat to rear. Flare-boards, 17 inches above floor. Strongly ironed throughout, also ironed to receive four-post canvas top, which can be had from stock at \$40 additional. **CAPACITY**, 1600 lbs. **PRICE**, \$750. Various types of bodies are obtainable. The Panel Type B is an unusually handsome job. Price, \$150 extra. Inside measurements: 42 inches wide, 53 inches from floor to top, 84 inches back of driver's seat to rear. Canvas side body similar in appearance to Panel Type B—\$50 extra.

WE HAVE A MOST  
ATTRACTIVE  
PROPOSITION FOR  
DEALERS. Write us.



THIS IS THE FACTORY  
"Built in Newark, N. J."

## THE CAR TO SEE AT THE SHOW

Address all correspondence to

H. J. **KOEHLER** S. G. Co., 1709 Broadway, New York, N. Y.

### SPECIFICATIONS

**MOTOR**—2 cylinder opposed, 22-24 H. P. Lubrication mechanical and integral with motor; 300 miles one supply of oil.

**COOLING**—Thermo-syphon system.

**IGNITION**—Bosch High-Tension Magneto. No batteries or coil needed.

**CONTROL**—Left hand, throttle lever, on steering column.

**DRIVE**—Direct line double universal joint with jack shaft. Final drive from jack shaft to rear wheel sprocket through double side chains.

**TRANSMISSION**—Planetary type. All gears genuine chrome nickel steel, hardened throughout.

**BRAKES**—Service brakes on jack shaft. Emergency brakes simple in design, extraordinarily powerful, operated independently.

**TIRES**—2 in. Solid Rubber.

**TREAD**—58 in.

**CAPACITY**—1600 lbs.

**WHEELBASE**—85 in. **WHEEL**—36 in. front, 48 in. rear.

**SPEED**—4 to 16 miles per hour.

**PRICE**—\$750 to \$900, depending on body equipment.

**OIL-TIGHT CASE**—In which transmission, differential, bevel gears and metal to metal clutch run in a **CONSTANT OIL BATH**. 1000 miles with one supply of oil.

# EFFICIENCY

Is Today's Slogan of Industrial  
Success

It points the way to bigger profits, better results in every department of business activity.

In the application of motor trucks to meet the needs of modern haulage and delivery, efficiency means a careful consideration of all the conditions surrounding a contemplated service and the selection of motor truck equipment that is best suited to it in type, capacity and size.



Built in both Gasoline and Electric Types and in 41 capacities and sizes—offer the utmost in motor transportation efficiency and economy.

No matter what your business, you need not force it to conform to any particular type or size of truck, when you can choose GMC gasoline or electrical vehicles that will exactly fit your service.

You can learn more about this matter of efficiency in motor truck application and the distinctive features in GMC design if you will accept our invitation to visit our displays at the New York Commercial Car Show.

Gasoline Truck Exhibit  
Space 5A Madison Square Garden

Electric Truck Exhibit  
Space 36A Grand Central Palace

**GENERAL MOTORS TRUCK COMPANY**  
Pontiac, Mich.

Branches: New York, Boston, Philadelphia, Detroit, Chicago, Kansas City and St. Louis



# SPLITDORF

**"Always There"**

Splitdorf ignition devices are making rapid headway in the choice of owners and drivers of the automobile, the motor truck, the motor boat, the motorcycle, the aeroplane and the motor-driven farm implement. Sheer merit has brought them to the front in the face of the closest competition.

Splitdorf Plugs are not experimental—they are **standard**. Known since their first appearance as the "common sense plug," they are exactly that—no more and no less. Splitdorf Plugs will outlast your motor. There is nothing fanciful about them—they are made to endure any and every strain of ignition put upon them.

Four magnetos of the well-known Splitdorf low tension type are making their appearance for the first time, minor structural changes on the older styles giving the latest models a smoother and more compact appearance. Models "W" and "Z" are of the 3-pair magnet type, designed for heavy, low-speed 4 and 6-cylinder motors respectively, while the "X" and "Y" are of the 2-pair magnet type for 4 and 6-cylinder motors respectively, in which efficiency has been raised to the highest standard.



*If interested in any form of ignition for gasoline motors, just write in for our free literature. Our new Catalog, our "Racing Record," or our "New Lights for Old" is yours for the asking. Do it TODAY.*



## Splitdorf Electrical Co.

98 WARREN ST.

NEWARK, N. J.

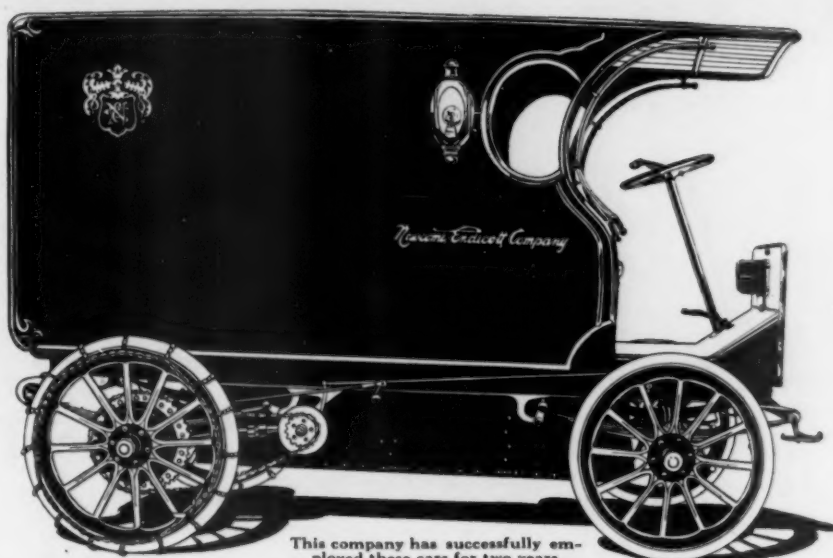
### BRANCHES:

NEW YORK 18-20 West 63rd Street	DETROIT 868 Woodward Avenue
BOSTON 180-82 Massachusetts Avenue	KANSAS CITY 1823 Grand Avenue
PHILADELPHIA Juniper and Cherry Streets	SEATTLE 1628 Broadway
CHICAGO 1110 South Michigan Avenue	LOS ANGELES 1228 South Olive Street
SAN FRANCISCO: 430 Van Ness Avenue	BUENOS AIRES
LONDON	

When Writing, Please Say—"Saw Your Ad. in the C C J"

*THE*  
***Detroit***  
*ELECTRIC*

# COMMERCIAL VEHICLE



This company has successfully employed these cars for two years

## —IN YOUR RETAIL BUSINESS—

### How Many Stops per Day Does One of Your Horse Delivery Vehicles Make on an Average?

An investigation will probably show about one hundred and fifty package deliveries per day per team.

We will not draw any comparison between the effectiveness of this car as compared with horse delivery wagons. Such comparisons are now superfluous after hundreds of Detroit Electrics have unquestionably proven their superiority.

Now consider the kind of labor required to man a Detroit Electric. One of those horse drivers is all that is needed. In forty-eight hours, he can master all of the simple things he need know to successfully handle the car.

Consider also a Detroit Electric's reliability in performance. Figuring three hundred working days per year, we can produce proof showing scores of cases where these cars have been on the job over 98% of the time.

Remember also that you can figure absolutely, with Detroit Electrics, the cost per mile of operation, per package delivered, or per any way you wish. Simple instruments on each car are infallible evidence of mileage traveled, current consumption, etc., for any length of time you wish to have it.

And, finally, remember that the Detroit Electric is not a car whose structural endurance throughout is hampered by carrying a battery of the "constant-attention" and "expert-care" variety. The car is designed exclusively for the Edison Nickel and Steel Battery, that current-storing agency which is built on the assumption that the great majority of users will not be graduate experts in electrical science. This battery is guaranteed to deliver its rated capacity at the end of four years of service anywhere, regardless of the mileage it may develop in the meantime.

Information in the shape of catalog and other data can be had at any time by simply requesting it.

## ANDERSON ELECTRIC CAR COMPANY

456 Clay Avenue, Detroit, U. S. A.

Boston  
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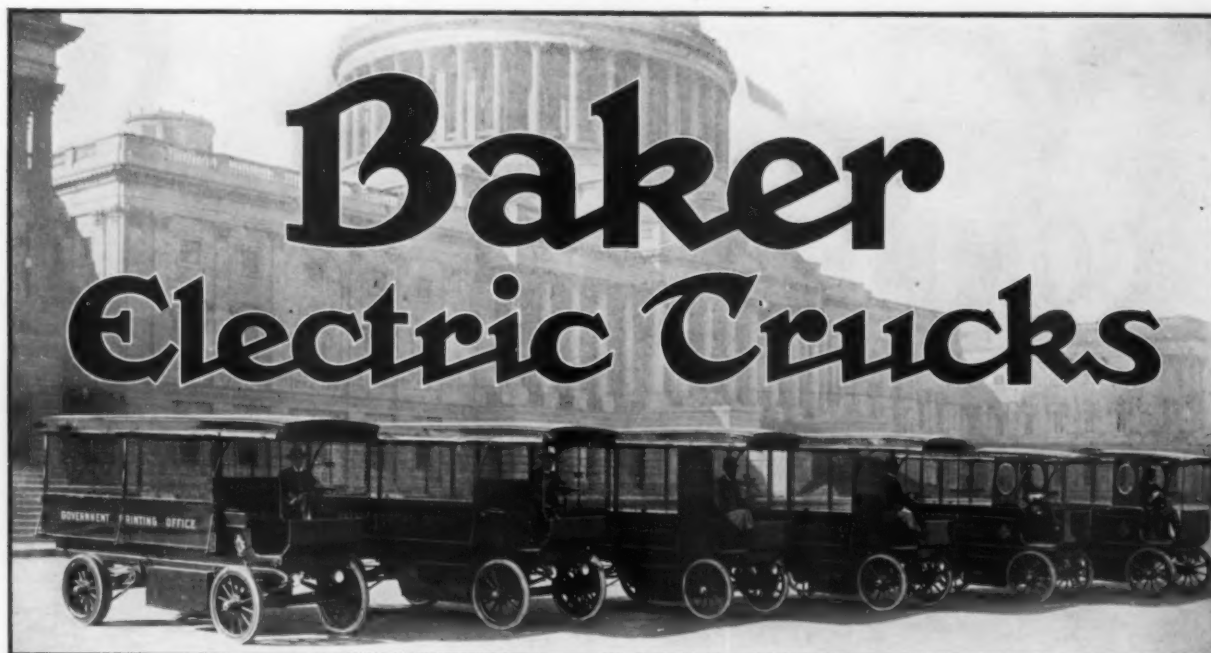
### BRANCHES:

New York - - - - Broadway at 80th Street  
Chicago - - - - 2416 Michigan Avenue

Evanston  
Kansas City  
Minneapolis

*Selling representatives in most leading cities*

When Writing, Please Say—"Saw Your Ad. in the C C J"



## How the Government is Solving Transportation Problems by Installing Baker Electric Trucks

Baker Electric Trucks are famous for giving *the kind of service that proves something.*

For instance, in the installation for the Government Printing Office at Washington, six Bakers are engaged in the strenuous work of hauling the product of the largest business of its kind in the world. They displace 17 horses and 11 wagons; it is estimated that in about two years they will save enough money to offset the total cost of installation. • This is Baker Economy.

Baker Electric Trucks are giving similarly satisfactory service for the Department of the Interior and at the Executive Office at Washington.

The Baker Truck is chosen because the underlying principles of its construction make it essentially a truck of greatest dependability at the lowest cost of operation.

Those principles are not mere applications of theory. They are the tried result of fourteen years' experience in *leading the way* in electrical vehicle construction in the United States—experience which covers the creation and perfection of every important feature thus far introduced in the industry.

To the business man who wants a brief *reason* for Baker supremacy, this is amply sufficient—it is powerful evidence of the correctness of Baker design, Baker construction and Baker workmanship.

If you are open to better results and greater economy in your delivery department, why not let our Transportation Cost Bureau furnish you with definite figures showing what may be done with electric truck equipment especially adapted to your business.

### 500 Pounds to 4 Tons Capacity

all having the service backing of the largest plant in the world devoted exclusively to the manufacture of electric vehicles.

Correspondence is solicited from men or concerns in unoccupied territory who are equipped to handle the Baker along the lines the merit of the truck deserves.

### THE BAKER MOTOR VEHICLE COMPANY, CLEVELAND, OHIO

*Makers also of Baker Electric Coupes, Victorias and Broughams*

Los Angeles, Tenth and Olive Sts.  
Kansas City, 3105 Gillham Road  
Detroit, 815 Woodward Av.

Chicago, 2023 Michigan Av.  
New York, 1798 Broadway  
Washington, 1138 Connecticut Av.

Spartanburg, 818 Fourth Av.  
Boston, 801 Boylston St.  
Seattle, 1718 Broadway

Sacramento, 1217 Seventh St.  
Richmond, 1623 West Broad St.

Philadelphia, 1927 Market St.  
Denver 1542 Broadway

Canada: The Baker Motor Vehicle Company of Canada, Ltd., Walkerville, Ontario.

*Representatives in Other Leading Cities*



# The Varnish That Defies Soap

## See it at the Automobile Shows



Look for the wheel revolving in the soapy water at our Booth at the National Automobile Show at Madison Square Garden and at the other shows later.

¶ It is a startling demonstration of our Vanadium Chassis Finishing, a varnish which is absolutely unharmed by the caustic action of automobile soap.

¶ Six of the spokes of the wheel are finished with the best automobile gear varnishes heretofore made. They cannot withstand soap, and turn gray and lose their lustre. The other six spokes are finished with

## Valentine's Vanadium Chassis Finishing

¶ These spokes stand up absolutely unharmed after weeks of exposure to soap and water.

¶ This is the varnish for the hood, fenders and underparts of your car. It resists mud, road oil, grease and the heat from the motor, as well as it resists soapy water. It will keep the finish of these parts of your car in perfect condition many months after the ordinary varnish would be destroyed.

¶ You will be interested in a new booklet we are issuing, "The Care of the Car." It tells all about how to preserve the finish of the car, and will, we are sure, prove of value to you. It describes Vanadium Chassis Finishing. We should like to send it to you free of charge, of course. Just fill out the coupon.

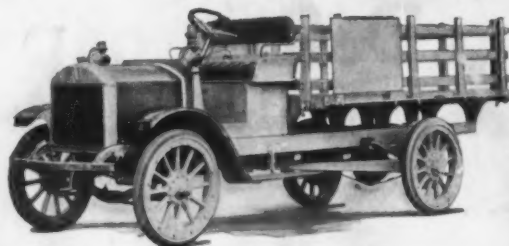
### Valentine & Company

456 Fourth Ave., New York      343 S. Dearborn St., Chicago  
74 Pearl St., Boston

TRADE **VALENTINE'S** MARK  
**VARNISHES**

Fill in—Tear Off—Mail Today  
**VALENTINE & COMPANY, 456 Fourth Avenue, N.Y.C.**  
Name.....  
Address.....  
Please send me copy  
of your booklet  
"The Care of  
the Car"

When Writing, Please Say—"Saw Your Ad. in the C C J"



Standard Stake Body



Standard Express Body

## The Universal Motor Truck Company Announces the One-ton Worm-drive Truck

The Most Modern Achievement of Automobile Engineering Skill

TELL US ABOUT IT

**T**HE worm-drive as a means of motor-truck propulsion has been successfully used in Europe for years, but American manufacturers have been slow to take up the worm drive because of existing patents.

After two years of experimenting, we have adopted the best standard English design of worm and worm wheel, built here with imported machinery.

Note the absence of intricate machinery—as clean-cut as a cameo; as businesslike as a battleship.

It typifies power, endurance, strength and simplicity.

Its driving mechanism has stood the stress and strain of 10,000 miles of hard work over country roads and city streets on five test trucks that have been in experimental service since last Spring.

### Here are a few of the Special Features:

Rated capacity, 2,000 pounds; guaranteed capacity 1½ tons.

Weight, 3,300 pounds.

Engine, Mono-bloc; four cylinders; long stroke; enclosed valves.

Full 30 Horsepower.

Dual Ignition.

Full tired; Front wheels 34 in. x 3½ in.; rear wheels 34 in. x 5 in.

Wheel-base, 130 in.

Loading space, 10 feet long and 3 feet from the ground.

Left-hand drive; center control.

Full floating axles; Timken bearings; enclosed brakes; pressed steel frame and many other splendid improvements.

Detailed specifications may be had on application.

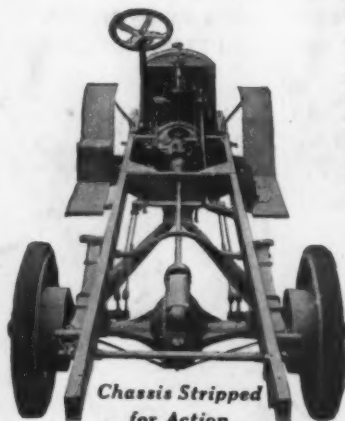
Does it do more work than horses and wagons?

That point has been demonstrated so often that it is wasting space to re-

publish a lot of self-evident statistics.

Suffice it to say that any man with hands and feet to work and a head to think can make a living out of one of these trucks.

Any successful merchant can see where his business can be doubled.



Chassis Stripped for Action

**Universal Motor Truck Company**

FACTORIES:

Detroit, Mich., U.S.A.

500 Theodore Street



Load 3200 Pounds

### How Much Do You Charge for It?

In making prices on this one-ton truck we are inaugurating an entirely new departure in selling motor trucks. We assume that when a customer wants a truck he does not want to buy a chassis. What he wants is a complete article. We are therefore quoting prices on this truck with two types of standard bodies, complete in every respect, fully equipped, painted and ready to be loaded and immediately put to work.

### PRICES:

Standard Stake Body . . . \$2,000.00

Standard Express Body . . . 2,050.00

Painting, Optional, with any standard colors.

In case a special design of body is desired, we will charge \$1,950.00 for the chassis, driver's seat and equipment.

These prices are for cash only, F. O. B. Detroit.

### Confidential

This is really a 1½ ton truck that we are selling at a one-ton price, and the only way we can put the materials and improvements in this truck and sell it so cheaply is by manufacturing in large quantities. This we are able to do in our own factories in Detroit, the largest factories in the country devoted exclusively to making high-grade commercial trucks.

We also manufacture and sell the Universal standard 2-ton chassis, \$2,750.00, and the Universal standard 3-ton chassis, \$3,400.00, F. O. B. Detroit.